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ABSTRACT

This research is based on more than 1,600 school district property tax elections in California from the mid-1950s to 1972. Population, housing, social, demographic, and economic information by school district was available. This large, comprehensive, and consistent data base permitted investigation of the choices of the electorate with respect to school taxes and formulation of a better understanding of the reality behind the notion of taxpayer revolt. School districts that pass and fail tax elections have very similar characteristics; only a few variables were significantly different. Most important, the proposed tax, the existing tax, and tax change were all smaller in the passing districts. Taxpayer revolt--that is, a shift in observed behavioral patterns against the paying of higher taxes--was investigated for the years 1966-72. During this period, no evidence turned up that was consistent with the notion of revolt; voter behavior did not shift over this period. However, after taking higher taxes into account, underlying behavioral patterns were shown to have shifted between the 1950s and 1960s. (Author/IRT)

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SCHOOLS, TAXES, AND VOTER BEHAVIOR: AN ANALYSIS OF SCHOOL DISTRICT PROPERTY TAX ELECTIONS

PREPARED UNDER A GRANT FROM THE FORD FOUNDATION

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PREFACE

Court mandated reforms in the methods used to finance education at the local level have stimulated much research into alternative finance schemes and their implications, but little attention has been paid to continuation of the most common existing method--dependence on the local property tax. Most politically acceptable reform proposals involve only marginal changes to the present system, and these generally include some form of taxpayer relief, stimulated in part by the widespread notion of a taxpayer's revolt.

The Ford Foundation provided a grant to The Rand Corporation to investigate the school finance implications of the *Serrano* type of court decisions. Rather than replow already well-tilled fields, this report on California school district property tax elections explores the citizen's demonstrated attitudes toward property taxes and whether there have been shifts in attitude over time. The results of this study should be of interest to those practically involved in planning school finance as well as to students of the subject.

The authors wish to acknowledge the perceptive criticism and productive suggestions of Bridger Mitchell, and the computing assistance of Phyllis Kantar.

SUMMARY

This research is based on more than 1600 school district property tax elections held in California from the mid-1950s to 1972. Population, housing, social, demographic, and economic information by school district was available from the 1970 census. The State of California provided detailed receipt and expenditure data for the 1969-70 and 1971-72 school years. This large, comprehensive, and consistent data base on California school districts permitted investigation of the choices of the electorate with respect to school taxes and enabled a better understanding of the reality behind the notion of taxpayer revolt.

School districts that pass and fail tax elections have very similar characteristics. Only a few variables were significantly different. Most important, the proposed tax, the existing tax, and tax change were all smaller in the passing districts. High family incomes were associated with passing districts and low incomes with failing districts. Multivariate regression analysis with a dichotomous pass-fail dependent variable showed that the variables related directly to the tax election itself (mentioned above) were the most important, with the proportion of families with incomes greater than $25,000 as the only other consistently significant and important variable.

For one school year, 1971-72, election results were available that included the ratios of actual to registered voters (turnout) and the percentage of "yes" votes to total votes cast. Our analysis showed that the numbers of assenting voters fall and numbers of dissenting voters rise with larger values of the proposed tax increase. Total turnout rose with the proposed tax increase. Increased turnout that was unassociated with the size of a tax increase (stimulated, for example, by a general election) also tends to be dissenting.

Taxpayer revolt--that is, a shift in observed behavioral patterns against the paying of higher taxes--was investigated for the years 1966-72. During this period, no evidence was turned up that was consistent with the notion of revolt. Voter behavior did not shift over this period. Different sectors of the community were examined to see

if revolt might be localized to some particular social class or type of community. Rich, poor, urban, rural, and blue collar subsamples failed to exhibit signs of change.

When a 1955-57 sample of elections was compared with the 1966-72 sample, a pattern of behavioral change became clear. Electoral success rates dropped from 80 percent to 50 percent while tax rates rose from an average of slightly over $1.00 per $100 of assessed value (one quarter of market value) to somewhat more than $2.00. After taking the higher taxes into account, underlying behavioral patterns were shown to have shifted between the 1950s and 1960s; the effect of the proposed tax rate on electoral success was twice as great in the 1960s as in the 1970s.

To investigate the determinants of calling a tax election, districts that had held an election between 1969 and 1972 were compared with all other school districts. The growth in assessed value had an expected negative effect on the probability of holding an election, as did the difference between the actual and predicted tax rate. That is, a district having a lower than expected tax rate (as predicted by a tax rate equation) had a higher probability of calling an election. Other variables (all negatively) associated with the probability of calling an election were the proportion of families with income between $5,000 and $10,000 or greater than $25,000, the suburban or rural nature of the community, and the property wealth per pupil.

Our findings can be interpreted as showing that there was indeed a taxpayer revolt more than a decade ago, whose effects remain. But the cries of revolt are still popular. Possible reasons for the widespread idea of current revolt are a highly visible property tax, steadily growing tax rates, increased numbers of older citizens to whom property taxes are especially onerous, the shifting of the school tax burden from state to local districts, a governor with a political philosophy that emphasizes lower government expenditures, and the well-established lobbying efforts of affected financial interests.

The California legislature passed a major tax act in 1972 that reversed many of the trends mentioned above. Together with falling enrollments and increasing property values, there will be a reduced need for property tax elections in the future as well as a likely decline in the cries of revolt.

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I. INTRODUCTION

Most school finance reform proposals introduced into the legislative process in the past several years include a measure of property taxpayer relief.[1] Political leaders, legislators, and school finance experts[2] have spoken for years of growing taxpayer resistance. The President underlined this concern on a number of occasions, but never so explicitly as in the following statement. "Local property taxes . . . have become an increasingly intolerable burden against which millions of homeowners have begun to rebel, and that has shown itself in local school bond issues being rejected in significant numbers all over the country." (Nixon, 1972.) The term "taxpayers' revolt" is commonplace in discussions of school finance. This study systematically examines school property tax election behavior over an extended period of time to provide a better understanding of the demonstrated choices of the electorate with respect to school taxes and to uncover the reality behind the notion of taxpayer revolt.

"Taxpayers' revolt" is defined here as a shift in citizens' attitudes against the paying of higher property taxes.[3] The theoretical basis of this study is that the values of the electorate are demonstrated by election results. We rely on the consumer preference as revealed in voting behavior. We did not attempt to get "inside" the taxpayer through interviews or questionnaires. We conducted no controlled experiments. Rather, we have collected the results of more than 1600 school district property tax elections (ignoring bond elections) in California from 1953 to 1957 and from 1966 to 1972 and

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[1] One prominent example was the major tax and school finance reform act passed by the California Legislature in 1972 (Senate Bill 90). Significantly, the act was titled, "Property Tax Relief Act of 1972."

[2] A report of the Urban Institute states, "School finance reform is inextricably tied to demands for property tax relief. This demand appears to have greater political support than equalization or meeting the fiscal crisis faced in urban school districts." (Cohen et al., 1973, p. 50.)

[3] A more comprehensive discussion of revolt is presented in Section IV.

attempted to relate the results to characteristics of the community, of the school district, and of the election itself.[1] Since the data are aggregated to the school district level, the reader must be cautioned that we cannot draw conclusions about individual behavior but must confine ourselves to statements about aggregate characteristics.[2]

Confining the analysis to California may raise legitimate concern over the generality of our findings. Our reasons for studying California are based on the following points: According to some experts, "the resistance to local school taxes, a national phenomenon, is nowhere more striking than in California" (Levin et al., 1972, p. 9); a rich set of data was available for California; and the first major court case calling for school finance reform (*Serrano v. Priest*) took place in California and, in fact, provided the chief motivation for this study.

The major determinant of tax election results is the size of the proposed tax rate increase. Voter behavior seems to be directly centered around the issues of the tax election. There was a sharp shift in voting behavior between the mid-1950s and the mid-1960s. Specifically, we found a higher probability of a given tax rate increase being accepted by the voters in the earlier period than in the more recent period. However, we could discern no change in behavior from 1966 to 1972. The taxpayers have revolted, but recent years in California have been characterized by stability rather than change in voters' preference for higher taxes. The revolt may be over, but its effects remain and are now being recognized, as school leaders and politicians slowly adjust to the new state of affairs.

The next section provides an analytical summary of the literature on tax election behavior. The analysis of election results and voter behavior is presented in Section III. The question of taxpayers'

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[1]The tax election data for the years 1953 and 1954 include only whether the election passed or failed. Those years were therefore omitted from most of our analysis.

[2]That is, we cannot say (for example) that high income individuals vote for higher school taxes but rather that communities with larger proportions of high income families have a greater probability of passing a given tax proposal.

revolt is examined in Section IV. Section V considers the process of holding elections as we attempt to develop equations to predict when elections are held. The final section presents a summary and interpretation of our findings.

II. LITERATURE REVIEW

Before we present the results of our analysis, we shall review what is already known about voting behavior in school finance elections and, in particular, about the reasons for the increasing number of defeats of these measures in recent years. Unfortunately, research on the subject is limited. What is known is based partly on a few studies that focus directly and exclusively on school finance elections and partly on studies that look at school finance elections in conjunction with other types of local referenda or in conjunction with school board elections. With a few notable exceptions, these studies tend to be limited to certain times and places, making extrapolation of their findings to other places and years rather risky. In addition, several of the studies we have looked at have methodological weaknesses that undermine our confidence in their findings. The existing literature therefore offers some useful clues and working hypotheses, but it is not a complete and consistent understanding of the phenomenon.

The scarcity of research into voting behavior in school finance measures reflects, in part, the general inattention of scholars to the political processes of the school system until recently.[1] Furthermore, until the early 1960s, an overwhelming number of these measures were approved easily by the electorate; and since conflict is generally regarded as more interesting than consensus, these elections did not attract investigation.

Wirt and Kirst devote a chapter of their book to the school finance referendum, attempting to place it in historical and theoretical perspective.[2] They conclude that, despite its origins in the political reform movements of the turn of this century as a mechanism of direct democracy, in most communities and for most of this century, the

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[1] This scholarly neglect, and its relation to the pervasive "myth of apolitical education," is discussed at length in Wirt and Kirst (1972), preface and Chapter 1.

[2] Ibid., Chapter 6.

referendum has not altered the fundamental mode of American school governance--namely, rule by professional schoolmen. It may be viewed as "not a substitute for or a bypass of the school's political authorities," but a "process for the public to ratify policy" and, for the policymakers, a "legitimating instrument for their own decisions."[1] Schoolmen must, of course, take the public's tastes and tolerances into account, and do seem to behave, according to Wirt and Kirst, in accordance with a "law of anticipated reactions." "Most referenda should succeed because schoolmen would call for them only when and in the form that could guarantee victory. As we have seen, that is exactly what does occur, judging by the record of the last several decades."[2]

Given this model of the school finance referendum, it is not surprising that the limited research on the subject seems to accept the premise that what needs to be explained is not why people do vote for school taxes or bonds, but why they don't. This is particularly true of several recent studies done in response to the shift in public behavior that seems to have occurred sometime in the early or middle 1960s, popularly known as "the taxpayers' revolt." But it is interesting that the earliest and still most comprehensive works on the subject--the Carter studies in the late 1950s--voice concern that the relationships between schools and their communities are troubled and cite as evidence the fact that about one-fourth of all first submission bond issues were being turned down by voters at that time.[3]

When a citizen casts a vote on a school finance measure he could be saying any one of a number of things (or some combination of all of them). Two obvious areas in which he might be expressing himself are economic and educational. A "no" vote might represent a decision that he simply could not afford the higher taxes involved, no matter how much he approved of what the schools would be doing with the money; since schools are financed principally through the local property tax,

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[1] Ibid., p. 97.

[2] Ibid., p. 109.

[3] Carter (1960); Carter and Sutthoff (1960).

this might signify his dissatisfaction with the level of his property tax bill, or it might involve an overall perception that the tax burdens from various levels of government are too high. Since the school tax referendum is the one place where he can vote directly on tax policy, he chooses to express this opinion in that forum.[1] This, essentially, is the argument given for saying that the schools, in the last decade, have fallen victim to a property taxpayers' revolt.

Voting against school finance measures might be an expression of opposition to the schools, either to their performance in general or to some particular policy or controversy at the time of the voting. If the election is a bond issue and the opposition is to the particular action to be financed through the bond--a building, or a new elementary school in a certain neighborhood--then voting against the measure would have a direct effect on the policy involved. However, for more general elections such as budget or tax elections, a "no" vote might not serve directly to change what the voter dislikes about the schools (curriculum, discipline, desegregation policy), but it would give notice to school authorities that he reserves the right to withhold support from a system whose overall (or specific) policies and performances he disagrees with.

Of course, any voter's decision may represent a combination of these opinions. Insofar as voting on a school finance referendum is an economic act--deciding to buy something with public resources--the voter may be viewed as considering both the price and the product. A "no" vote may simply mean that he does not value the potential gain as highly as the cost. This could be an assessment based on personal tradeoffs--he will not derive as much benefit as it will cost him. Or it could be a statement about his perception of community tradeoffs--this won't bring as much benefit into the community as it will cost. In turn, these assessments will be affected by the value he places on education and by the value he places on his tax dollars.

In order to ascertain why voters vote the way they do on school finance referenda, one can either ask them directly in opinion surveys

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[1] Levin et al. (1972), p. 9.

or analyze the results of the voting in light of various community characteristics, aspects of the measure being voted on, and so on and then attempt to deduce the correlates of voter support and opposition. As Wirt and Kirst point out, most of the relevant studies in this field use one or the other technique, rather than combining the two to reinforce and validate their findings.[1] Each of these techniques has well-known problems. Attitude surveys run the risk of eliciting "expected responses" rather than what the voter really feels, and one cannot be sure that how a person says he will vote (or even how he says he voted) coincides with his actual behavior in the voting booth. Where there is a high non-response rate, it is usually assumed that the respondents are representative of the whole sample, rather than self-selecting in some systematic way that would bias the findings, an assumption that is not always justified.

With aggregate data, there are also serious dangers in interpreting one's findings. One cannot infer individual behavior from group level correlations--the so-called "ecological fallacy"--because the fact that two characteristics are associated in the aggregate does not necessarily mean they are associated in the individual. (Robinson, 1950; Shively, 1969.) For example, the finding that a community with higher numbers of wealthy individuals is more likely to vote in favor of school proposals does not, in itself, allow one to conclude that it is the wealthy people in the community who are casting the "yes" votes. However, even when one can legitimately conclude that individuals with certain characteristics--ethnic identity, socioeconomic status, occupation--consistently tend to vote a certain way, in the absence of attitudinal data, one cannot be sure of the reasons for this behavior, or even that various members of the group have the same reasons for voting that way. For example, the finding that wealthier citizens in a community tend to be more supportive of educational expenditures than poorer citizens could reflect their ability to pay, their inherent taste or values for education, their perception of congruence between the schools' goals and their own, general support for the establishment,

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[1] Wirt and Kirst (1972), p. 102.

or a combination of these--within and across individuals. There is some attitudinal data on these matters though we think the issue has not been definitively resolved. Therefore, we could only say whether or not the observed behavior is consistent with various *a priori* hypotheses, but we could not decide among the various hypotheses it is consistent with.

With this background, we will proceed to summarize what is known, pointing out unsolved questions as we go along. It is generally believed that school finance elections usually draw a low turnout, that those people interested enough to turn out are likely to be supporters of the schools, and that they are likely to be the higher status citizens in the community. Increases in dissenting votes--and possible defeat--are likely to be associated with high turnout, signifying that normally inactive and less supportive voters have been stimulated, for some reason, to come to the polls.

The first, and largest, investigation of voters' attitudes and voting behavior in school tax elections came in the late 1950s as part of a major study of school and community relations. In one phase of the study, several thousand voters in five communities were interviewed about their attitudes toward and participation in school life (Carter, 1960). In one of these communities, respondents were interviewed both before and after a bond election, and a number of questions referred specifically to that referendum. Another phase of that study analyzed the results of bond and tax referenda held between 1948 and 1959 in 1054 school districts across the country (Carter and Sutthoff, 1960).

The major finding reported in the first study was that most citizens in these communities did not actively participate in school affairs, nor (in the referendum community) did they turn out to vote on the bond issue. Those people who did vote (like those people who got involved in school affairs generally) were likely to be the more highly educated members of the community and to have children in school. They were also characterized by a sense that their participation could make a difference, an attitude that was lacking in many of the other citizens interviewed. The attitudes most closely associated with both likelihood of voting and of voting positively were favorable evaluation

of the local schools, pride in the schools, and feeling that school costs did not involve waste or mismanagement.[1]

This basic image of voting and support behavior was confirmed by the analysis of the election data from the 1054 districts. The mean turnout in the over 2500 elections reported was 36.3 percent, with a disproportionate number of elections drawing less than this average support. An impressive 85 percent of those elections passed. And it was discovered that higher turnout was associated with defeat. In the lowest range of turnout (less than 30 percent), many more elections passed than failed; in the middle range (from 30 percent to 60 percent), more failed than passed; and in very high turnout elections (over 60 percent--of which there were very few) passes and defeats were about equal. The average turnout was higher at failing than at passing elections, and this was true for both tax and bond elections in small, medium, and large districts.[2]

This association between higher turnout and higher dissent has been largely substantiated in subsequent research.[3] Although this pattern often holds, the association is, of course, not absolute. Some low turnout elections fail and some with a high turnout pass. As one "how-to" book for school administrators holding tax elections states, it "depends entirely upon the type of voter who goes to the polls on election day."[4]

Much of the literature argues that the additional voters who swell the usually low turnouts are likely to cast "no" votes. Some supporters of this thesis have even theorized that the motive behind their going to the polls is the opportunity to vote "no." Horton and Thompson (1962), on the basis of interviews done in two communities that had recently defeated bond issues, explained the increased turnout and dissent in terms of "alienation." Alienated voters--those who felt

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[1] Carter (1960), Chapters 1, 2, 4.

[2] Carter and Sutthoff (1960), pp. 110-111.

[3] Horton and Thompson (1962); Goettel (1971); Rossell (1974); Minar (1966); Wirt and Kirst (1972).

[4] National School Public Relations Association (1969).

powerless themselves and expressed suspicion of and hostility toward those with power in the community (including the school board)--turned out in large numbers to vote against the bonds. According to Horton and Thompson, their opposition was not directed at the measure itself but was a more undifferentiated act of protest, an example of what they call "phobic" politics. They argued that although feelings of alienation were highly correlated with low socioeconomic status, where it was not, alienation was a better predictor of political attitude and behavior than SES.[1]

One problem in determining the sources of additional turnout in higher turnout school financial elections is that there is practically no research focusing on the same district over time--covering both winning and losing elections--to see what the sources of turnout are for each election. Stone (1965), however, has examined a series of 18 referenda on various issues in the same city over a decade. On the basis of his findings he has suggested some modification of Horton and Thompson's alienation model. He found that half of the high turnout elections passed and half failed, and 85 percent of the low turnout elections passed. The fact that half of the high turnout elections did pass led Stone to conclude that the usually inactive voters need not be potential "no" votes; they represent a volatile force in the electorate, who, depending on the issues, controversies, and communications surrounding a given election, could sway the election either way. Of the four educational referenda in his sample, in fact, all had about the same low turnout, but three were resounding successes and one was a resounding failure. The one failure involved permission for the board of education to buy property for recreation, implying that even the supposedly solid core of citizens interested in education issues cannot be automatically expected to approve all board actions, particularly if a proposal might be construed as a "frill."

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[1] Gold argues, convincingly we think, that Horton and Thompson's data do not support their contention that alienation operates independently of socioeconomic status (Gold, 1962). We are less interested here in that contention, however, than we are in the description of some of the attitudes and psychological correlates that may accompany "no" voting.

Within the model of the low turnout, high support school finance elections, it has generally been asserted that citizens of higher social status form the core of interested, supportive voters. There are several pieces of evidence pertaining to this assertion, but it is not entirely consistent or convincing, partially because of varying definitions of "social status." We will review what has been found in several studies, attempting to clarify and (where possible) reconcile as we go along.

Carter found that the voter most favorable toward the school was young, with a child in school, a recent resident of the community, and a skilled worker, clerk, or salesperson. The most unfavorable voter was also young, with no children, a long-time resident of the community, and a professional or technician. Thus, although on the basis of education and status alone, one might have predicted the professional to be more positive toward school financing than the clerk, other factors, notably having children in the school, reversed this pattern. Carter notes that this finding "would support the common hypothesis that education is most useful to persons who want their children to move up in the social hierarchy."[1] Carter also found that the voter usually sees himself in the role of parent when he participates in school affairs and only rarely in the role of the taxpayer.[2]

In a study of school board elections and school finance referenda in 48 suburban Chicago districts, Minar (1966) found a negative relationship between socioeconomic status of the community and referenda dissent. This is not, as we cautioned earlier, sufficient grounds for concluding that it is the higher status individuals in these communities who were voting in favor of the referenda and the lower status ones against. Minar does not, in fact, argue this, but rather that the conflict-management skills evidenced by high-status communities allows them to reconcile possible conflicts outside of the electoral arena. Interestingly, though, his community social status variables are more highly correlated with low dissent on school board elections

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[1] Carter (1960), pp. 57-58.

[2] Ibid., pp. 77-79.

than they are with low dissent on finance referenda, implying that his higher status communities are more successful in avoiding election dissent than finance referenda dissent. Also, while community scores on income, education, and occupation scales all correlate at about the same level with school board election dissent, income is more *negatively* correlated with referenda dissent than the other two community indicators. Minar thus deduces that an important factor in referendum voting--more important than in school board voting--is ability to pay, as reflected in community income levels. The higher the income, the higher the percentage support for the tax or bond measure.[1]

Using data on many types of public expenditure referenda from several cities, Wilson and Banfield (1964) have demonstrated that the higher income wards and suburbs consistently were more supportive of these measures. They also found that "in all of the elections we have examined, non-homeowners show more taste for public expenditures that are to be financed from property taxes than do homeowners."[2] They could explain this latter finding on the basis of economic self-interest. Low income renters would benefit (perhaps disproportionately) from these public services and do not pay the property taxes (except perhaps indirectly in their rent) that support them. The former finding, however, that high income voters support such measures could not, Wilson and Banfield argue, be explained purely on the basis of economic self-interest. Even taking into account the presumed diminishing marginal utility of the dollar (an extra dollar in taxes means less to a wealthier person), the fact that these wealthy voters support some measures from which they would obtain no direct benefit (for example, a hospital for the indigent) led Wilson and Banfield to conclude that their behavior reflects a political ethos involving the value of "public regardingness"--a willingness to pay for things for the welfare of the community as a whole, regardless of narrow personal interest.

Assuming that the pattern Wilson and Banfield discovered for public expenditure referenda is valid in general--and that it holds up

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[1] Minar (1966), pp. 828-829.

[2] Wilson and Banfield (1964), p. 877.

for educational referenda (only a few of the elections they studied were school-related)--we do not feel it is sufficient basis for concluding that this represents primarily altruism. The wealthy derive benefits from education. In fact, some have argued that, given the unequal distribution of educational resources within cities, the wealthy receive a disproportionate benefit from school expenditures. If the wealthy--who also tend to be better educated--do value education more highly than other groups, it may be partly for themselves (self-interest) and partly for the good of the community (public regardingness). We are not so ready as Wilson and Banfield to dismiss the effect of ability to pay on voters' decisions on school finance referenda. Although Wilson and Banfield were most interested in what they considered the unusual behavior of the upper classes, we think an equally interesting finding for our present problem is their finding that "middle income homeowners often vote against proposals that are approved by both the very poor (renters) and the very well-to-do (owners)."[1] It is just this in-between group--the middle income homeowner--where most observers have located the increasing taxpayer resentment and resistance in recent years.

In looking at the association between socioeconomic status and voting behavior, it is difficult to determine to what extent various elements--ability to pay, general values for education, perception of benefits derived from education--are contributing to this effect. Rossell (1974) observes that the level and even the direction of the association may depend on what elements of socioeconomic status are selected. In her data, involving tax and bond referenda from 1963-72 in 63 northern cities that were desegregating their schools, she found that education and income relate differently to referenda dissent. When the election was held with other issues on the ballot, education had a negative relationship with referenda dissent. When held alone, no relationship was observed. Income, however, had a positive relationship to dissent in both kinds of elections. "Thus communities with higher educational levels tend to be more supportive, but higher

[1] Ibid., p. 881.

income communities are more dissenting."[1] This positive association between income and dissent goes against what Minar, and Wilson and Banfield found.

One other aggregate dimension that has received some attention in analysis of voting behavior on local public expenditures is race and ethnicity. Wilson and Banfield found that within income classes, blacks were consistently more likely to vote favorably than other ethnic groups, such as the Irish and Polish.[2] Wirt and Kirst note, however, that "compared to urban whites, blacks support tax referenda much more, but they turn out to vote less, and even when turned out they vote less on school referenda."[3] Corroborating Wilson and Banfield's finding of relatively low support for public expenditures among certain white ethnic groups, Rossell found a strong positive correlation in her data between percent of foreign stock in a city and tax referenda dissent.[4]

THE "TAXPAYERS' REVOLT"

Although reasonable people may differ on what constitutes "revolt," and educators, politicians, and the popular media may have exaggerated the extent of the crisis in school finance in recent years based on referenda defeats, there is ample evidence to show that fewer of these measures pass today than used to, say, in the period studied by Carter and Sutthoff (1948-59). Something seems to have changed. Records of defeats also have not reflected the number of district authorities who, exercising their "anticipatory wisdom" do not call a referendum for fear it would lose. However, in a recent survey of California school superintendents, Meltsner et al. discovered that only 20 percent of them felt they could pass a modest tax increase in their districts, 42 percent felt they could not, and the rest were undecided.[5] How can this changed situation be explained?

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[1]Rossell (1974), p. 262.

[2]Wilson and Banfield (1964), p. 883.

[3]Wirt and Kirst (1972), p. 103.

[4]Rossell (1974), p. 265.

[5]Meltsner et al. (1973), pp. 42-43.

If we accept the proposition that over the years school districts in general have had a solid base of fairly high status supporters who turn out in low numbers to pass school finance referenda, and if the source of opposition to these measures is generally lower status individuals who are stimulated to participate only because of some special situation (a controversial campaign, an increased burden of taxes), then we should find the increase in defeats in recent years being accompanied by higher turnout. Carter and Sutthoff (1960) found no trend of increased turnout from 1948 to 1959 (even though when their study was published they were expressing concern over increased numbers of bond issue defeats)[1]; and Rossell, in her sample of 63 northern cities, found only a slight increase in mean turnout figures during the following decade from 1963 to 1972. She did, however, find a steady increase in mean dissent.[2] Rossell's confirmation of the correlation between turnout and dissent implies that the old model is still valid. But the steady increase in mean dissent without a correspondingly large and steady increase in turnout implies that we are observing not just a turnout of newly activated negative voters but some traditional supporters of the schools uncharacteristically voting against increased school support.

In either case, we are seeing changed behavior: either traditional supporters voting "no," or traditional nonvoters (who by their collective act of sitting it out were allowing most of these elections to pass) coming out to vote "no." What might have been causing these people to change their minds? The tax situation? The educational situation? A more pervasive feeling of malaise about governmental processes in general? Or some combination?

Goettel (1971) attempted to test the influence of fiscal factors--both school related (including increase in school budget, increase in school property tax, increase in teachers' salaries, percentage of school budget locally raised) and non-school related (increase in county budget, increase in town budget, increase in county-town property

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[1] Carter and Sutthoff (1960), p. 123.

[2] Rossell (1974), p. 279.

tax rate) on participation and dissent in New York school budget referenda in 1969. He expected that these measures of burden on the taxpayer--from schools and other local levels of government--would predict greater participation and dissent, thereby providing empirical evidence for the existence of a taxpayers' revolt. To his surprise, these independent variables, in addition to background variables of community size, growth, and wealth, left more than half of the variance in voter participation and dissent to be accounted for. Goettel hypothesized that the residual variance might be explainable in terms of the local educational context--particularly school-related controversies.

Rossell also discounted the effect of rational or economic behavior in finance referenda when she discovered that neither the local school tax rate nor the property assessment ratio was related to the level of dissent votes.[1] She does offer some direct evidence on the effect of a specific school-related controversy--school desegregation--on tax and bond referenda dissent. She did not find a relationship between school desegregation controversy and increased turnout in finance referenda, but she did find that tax referenda dissent was positively related to civil rights activity aimed at the schools (for the 1963-72 period) and to the amount of desegregation in the schools (for the 1968-72 period). This relationship was particularly evident in lower status communities, especially those with high percentage of foreign stock.[2] She thus found that, in at least some communities, dissatisfaction with school policy is translated into opposition to school finance support. She interprets her analysis of referenda voting as being supportive of the alienated voter model. The lower middle class white voter, already perhaps the most pressed by tax burdens and inflation, is most likely to resent the increased demands of blacks on the school system and express this resentment by voting "no" on requests for higher school taxes.

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[1] Ibid., p. 259. Her coverage of a very broad geographical sample, however, leads one to suspect that her property and tax variables might not have been appropriately standardized across states.

[2] Ibid., pp. 272-279. Rossell had found that reaction to school desegregation in higher status communities tended to be manifest in dissent on school board elections, rather than on finance referenda.

It is surprising that one very obvious possible determinant of voter support for tax referenda--the size of the tax increase--has received little attention. Wirt and Kirst mention in their summary that "to our knowledge it has not been studied" and offer a limited analysis of three years of California data (a subset of our data) showing that, in general, the higher the tax increase the less likely it is to be passed.[1] Rossell actually found that, after controlling for other factors, districts requesting smaller tax increases were likely to face higher dissent![2] The one other study we know of where tax increase was tested as an independent variable is Goettel's. He found that the mean increase in property tax rate in defeating districts was $1.14 greater than in passing districts, but in his various multiple regression runs he found this factor to be either insignificant or of only very slight explanatory power.[3]

For our data on California school tax referenda, variables specific to the referendum itself, especially the requested tax rate and the percentage increase in the tax, better explain election results than the community characteristics and school fiscal variables we examined. However, they still are far from explaining everything, leaving us with the same feeling as Goettel that perhaps factors in the educational context of the districts, some of which may be idiosyncratic, some common to many districts, are needed for a better explanation of voter behavior.

What emerges from our review of the existing literature on this subject is a less than satisfying understanding of the phenomenon of current voter behavior in school finance elections. The major attitudinal insights in this area derive from Carter's work (and these are based on only five districts, only one in connection with an actual election), and we might question whether the changing educational and social scene in the last 15 years hasn't affected some of the underlying patterns he found. More recent studies have tended to be

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[1] Wirt and Kirst (1972), pp. 104-106.

[2] Rossell (1974), p. 267.

[3] Goettel (1971), pp. 13-17.

smaller--and therefore probably more idiosyncratic--leaving us hesitant to generalize. Many of the effects that have been reported are based on limited data and the use of unsophisticated statistical procedures. Having just seen in the course of our own analyses how changes in the sample definition or the choice and definition of variables included in statistical tests could affect the results, our confidence has been undermined in the findings of other studies, where similar sensitivity analyses were not performed or reported. Those seeking definitive answers or generally applicable rules of voter behavior in this area will, therefore, be disappointed. Although this is undoubtedly partly because of the limited extent to which these matters have been studied, we do not have sufficient evidence at this point to reject the alternative hypothesis--that there are no such rules.

III. VOTING BEHAVIOR

CONTEXT OF THE STUDY

Institutions

School districts in California can be one of three basic types: elementary, high school, or unified. In 1969-70 there were 726 elementary districts with 24 percent of the pupils, 120 high school districts with 11 percent, and 236 unified districts with 64 percent of all pupils. Districts of each type elect school boards and establish local school property tax rates. Since boundaries of a high school district usually encompass several smaller elementary districts, voters in such districts are served by, and pay taxes to, two completely separate school administrations. Unified districts provide a single administration for all elementary and secondary schools within their boundaries. The main reason for calling attention to these organizational differences is that property value per average daily attendance (ADA) and many other characteristics depend on district type. Since the number of elementary pupils within a given area is usually greater than the number of secondary pupils, the property value per ADA will be greater for a high school district than for an elementary district, and the tax rate can therefore be lower. Tax rates in a unified district must cover both elementary and secondary pupils and therefore will generally be higher than in either elementary or secondary districts.

Maximum property tax rates are established by statute in California. These statutory limits can be overridden by the voters in a local school district, 50 percent of the votes cast being required for passage. It is these elections that are the subject of this study. Until 1955, the statutory limits were increased periodically over the years, but these limits have not been changed during the period covered by this study. To partially overcome the prescribed tax limits, the legislature has allowed school districts to impose new taxes for specified purposes without going to the voters for approval. There are now

approximately 50 such "permissive overrides," and they represent from one-quarter to one-third of the total school tax rate.

When a district puts a new tax rate before the voters, it also specifies the time period during which it is to be in effect. This period can range from one year to an unlimited number of years. If a tax proposal is defeated, the effective tax rate becomes either the statutory limit or the last previously voted rate, if the specified period has not expired. In many cases when a voted effective period has expired, a district may choose to keep the same rate, in which case it must still go to the voters to approve the extension of the effective period. This was the case in about 15 percent of our sample of elections.

Bond Elections

California voters must also approve school district bonds for capital expenditures. There are several reasons why we have not included bonds in our analysis. Bonds represent an investment in future capacity, whereas tax rates cover only current expenditures. The analysis of capital expenditures is quite complex since it must consider future demands, interest rates, expected growth trends, and the myriad of dynamic adjustment patterns that organizations can manifest in meeting both their anticipated and demonstrated needs. Capital expenditures are also generally postponable without an immediate effect on near term performance, whereas the effect of changes in current expenditure can be predicted and observed more readily. Because of these many problems, bond elections are ignored in this study. We were more confident, *a priori*, in any conclusions coming out of a study of tax rate elections than we would have been in a study of bond elections.

Data

The data on tax elections came from compilations made by the California Teachers Association for the years 1953-57 and 1966-72. For most years, information is available on the existing tax rate, the proposed tax rate, the proposed effective period, and whether the proposal passed or failed. The 1953-54 data provided only pass and

fail indications. The 1971-72 data included the percentage of registered voters who voted in the election as well as the actual percentage approving the new tax.

Census information for 1970 provided detailed social, economic, and demographic information on every school district with more than 300 ADA.[1] Financial receipt and expenditure data, by school district, for the school years 1969-70 and 1971-72 were made available by the California State Department of Education.

The census information was gathered in the middle of the 1966-72 period. Since these demographic features are slow to change, we felt confident in applying them to all observations in the seven-year period. The financial and school district information for two different years allow calculations of growth rates or changes. These changes were applied to observations of earlier and later years, although with less confidence than in our similar treatment of the census variables. We report below on a test of the appropriateness of extending these measures throughout the time period of the sample.

In the statistical results reported below, the number of observations fluctuates because the data set was compiled from several sources whose coverage varied. There is fairly complete coverage on districts accounting for approximately 970 elections, but this number will vary as different variables are included in the analysis.

ALTERNATIVE HYPOTHESES

We began the analysis by exploring several *a priori* hypotheses on election passage or failure suggested by earlier research or by reasonable theoretical assumptions. Earlier research had placed great stress on socioeconomic effects. These effects could work through several paths: SES may be related to the taste for education; it may be tied to the supportive or non-supportive role of the electorate for the local political establishment; or since SES is related to income, it may be because as people get richer their demand for most goods, including education, increases. We account for SES here by sets of

[1] Census coverage and definitions are described in Bureau of the Census (1970).

variables measuring the relative number of families or individuals in various income, education, and occupation classes.

Another set of hypotheses argues that a tax election is a response to correct a disequilibrium in the school finance system. This disequilibrium is first perceived by the school authorities, who then present their decision to the electorate. Disequilibrium situations can arise in several ways. The school district may be faced by exogenous changes in important variables such as number of pupils, assessed property values, state financial aid, or teacher salaries. If these changes moved the district away from equilibrium, rational, informed, and objective voters would respond to these facts in their voting behavior. In this model, the desired change in the tax rate (Δ tax*) would be a function of the change in the vector of exogenous variables (ΔX):

$$\Delta \text{ tax}^* = f(\Delta X).$$

The probability of election passage would then be related to the difference (D) between this desired change in the tax rate and the change actually proposed by the school authorities.

$$\text{Probability (Pass)} = g(D) = g(\Delta \text{ tax}^* - \Delta \text{ tax}) = g[f(\Delta X) - \Delta \text{ tax}].$$

A second disequilibrium model assumes that there is some desired or normal level of school district expenditures and that deviations from this equilibrium level would be related to election passage or failure. The desired level could be derived from presumed household utility functions that yield demand curves for educational expenditures, or from a relationship between property values and expenditures. Regardless of the source of the desired level, it could be estimated from cross-section observations on expenditures or tax rates. Below we report on tests of several disequilibrium hypotheses.

Several hypotheses relating to a district's property base were also considered.

- The composition of the local property tax base was thought likely to have an effect on tax election outcomes. A large

proportion of non-residential property would mean that voters' tax dollars would be multiplied by the much larger contributions of commercial and industrial property owners.

- o The ratio of owner-occupied houses to total residences reflects the strength of the property tax payers in the community and would be negatively related to passage.
- o The value of owner-occupied housing is a measure of the direct effect on the owner's pocket of a tax increase and would be expected to have a negative effect on tax increases. But since it is also a fairly good measure of permanent income, which would be positively related to the demand for education, the net effect of this variable cannot be predicted from theoretical arguments.

Both theoretical considerations and some previous empirical work suggest that the number of children, or the number of families with school-age children, should influence voter behavior. Likewise, the whole age structure of the community would be important as neither older nor younger voters are expected to gain directly from increased educational expenditures. The rural-urban nature of the community and the racial mix have also been described as affecting educational preferences and voting behavior.

Finally, the issues directly confronting the voter in the polling booth could be expected to have the greatest effect on his decisions because most citizens are generally not interested in the details of school finance. Even those with the greatest involvement in local education have little awareness of the technical details of the financial system. A citizen comes face to face with a property tax rate only infrequently--on his property tax bill and in the polling booth. At the time the voter casts his ballot, he is confronted directly by a requested change in taxes, the proposed tax rate, and the period that the new tax would be in effect. These last mentioned variables turn out to have the strongest and most consistent effect on voting behavior.

STATISTICAL ANALYSIS

The characteristics of the passing and failing districts as drawn from a sample of 975 elections from 1966 to 1972 are shown in Table 1.[1] Much to our surprise, the differences between the means of most district characteristics were rather small and statistically insignificant. Variables describing demographic, socioeconomic, school, and growth characteristics were almost identical in the two samples.

Since many districts held more than one election during the six years covered by this set of observations, such districts are counted once for each election. We felt that double counting might be behind the findings of similarity, so a second test was made in which only the most recent election was included in the sample. With each district appearing only once, the results were unchanged.

As can be seen from Table 1, only a few variables differ between the passing and failing districts. District type is one of these--55 percent of elections in elementary districts pass, but only 42 percent pass in unified districts.[2] District size, as one would expect from the importance of district type, is significantly smaller for passing districts.[3] But of all the other SES variables, only income and the percentage of black population are significantly different.[4] The greatest differences are seen in the variables relating to the tax election--existing tax, proposed tax, change in tax, and proposed

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[1] Variables are defined in Table 2.

[2] These figures can be derived from those in Table 1 by multiplying the passing percentage shown in the table by the total number of passing elections, yielding the number of passing districts of the given type. This number is then divided by the total number of that district type holding elections.

[3] Both elementary districts and districts with small population tend to be more homogeneous than other districts.

[4] Blacks represent 7 percent of the California population, but the *unweighted* district means reported in Table 1 are only 2-3 percent. This difference arises because most blacks are concentrated in the large urban districts, so the absence of weighting leads to the observed discrepancy.

Table 1

MEANS[a] OF CHARACTERISTICS OF PASSING AND FAILING SCHOOL DISTRICTS, 1966-1972

(variables are defined in Table 2)

Variable Class	Variable	District Means		Significance[b] of Difference
		Passing	Failing	
Election	Elections, number	486	489	
	Tax, existing	2.00	2.14	.194
	Tax, proposed	2.46	2.81	.000
	Tax change	.20	.32	.000
	Period	9.6	12.5	.000
	Elementary[c]	.523	.417	.001
	High school[c]	.189	.188	.963
	Unified[c]	.288	.395	.000
Income	Less than $5,000	.198	.210	.033
	$5,000-$10,000	.306	.307	.822
	$10,000-$15,000	.265	.265	.968
	$15,000-$25,000	.178	.171	.168
	Greater than $25,000	.053	.047	.075
	Average income	11,435	10,980	.022
Education	Elementary	.114	.113	.813
	High school	.578	.585	.239
	College	.299	.293	.493
Occupation	Professional	.160	.154	.126
	Managers	.098	.096	.470
	Crafts	.140	.140	.708
	Sales and clerks	.243	.248	.133
	Blue collar	.189	.188	.954
	Farmers	.033	.036	.356
	Service	.122	.123	.530
	Household	.015	.015	.740
Demographic	Families with children	.590	.585	.323
	Children	.273	.270	.376
	Elderly	.147	.151	.156
	Black	.018	.024	.018
	Population	33,970	58,050	.055
	Suburban	.235	.212	.324
	Urban	.093	.082	.495
	Rural	.397	.405	.762
Property	Assessed value per ADA	22,000	21,800	.818
	Assessed value per capita	3,450	3,280	.281
	Residential per total property	.347	.354	.613
	Owner occupied	.585	.574	.141
	House value	18,570	17,710	.101
School Finance	State revenues, growth	.077	.063	.173
	Total expenditures, growth	.197	.163	.000
	Local per total revenues	.486	.491	.719
	Teacher expenditures, growth	.161	.125	.000
	Assessed value, growth	.163	.156	.433
	ADA, growth	.144	.165	.203

[a]Means are the unweighted means of district and election characteristics.

[b]Significance is the two-tailed probability that means are equal.

[c]Percentage of passing and failing elections held in elementary, high school, and unified districts.

Table 2

DEFINITION OF VARIABLES

Tax, existing:	The legal property tax limit on each $100 of assessed property value (one-quarter of market value); either the statutory maximum general purpose tax rate or a previously voted higher tax rate.
Tax, proposed:	A new general purpose tax rate, sought by school authorities and subject to voter approval.
Tax change:	Proposed tax divided by existing tax, minus one.
Period:	Number of years that proposed tax is to remain in effect; if period is unlimited or greater than 20, it is set equal to 20.
Elementary:	A dichotomous variable equaling one for an elementary school district and zero otherwise.
High school:	A dichotomous variable equaling one for a high school district and zero otherwise.
Unified:	A dichotomous variable equaling one for a unified school district and zero otherwise.
Income, less than $5,000:	Ratio of number of families with annual income less than $5,000 to all families.
Income, $5,000-$10,000:	Ratio of number of families with annual income greater than $5,000 but less than $10,000 to all families.
Income, $10,000-$15,000:	Ratio of number of families with annual income greater than $10,000 but less than $15,000 to all families.
Income, $15,000-$25,000:	Ratio of number of families with annual income greater than $15,000 but less than $25,000 to all families.
Income, greater than $25,000:	Ratio of number of families with annual income greater than $25,000 to all families.
Education, elementary:	Ratio of males (age 20-49) and females (age 15-44) with less than high school education to all males and females in the same age groups.

Table 2 (continued)

Education, high school:	Ratio of males (age 20-49) and females (age 15-44) with one to four years of high school education to all males and females in the same age groups.
Education, college:	Ratio of males (age 20-49) and females (age 15-44) with one or more years of college education to all males and females in the same age groups.
Occupation, professional:	Ratio of professional, technical, and kindred workers to all employed persons 16 years old and over.
Occupation, managers:	Ratio of managers and administrators except farm to all employed persons 16 years old and over.
Occupation, crafts:	Ratio of craftsmen, foremen, and kindred workers to all employed persons 16 years old and over.
Occupation, sales and clerks:	Ratio of sales and clerical workers to all employed persons 16 years old and over.
Occupation, blue collar:	Ratio of operatives (except transport), transport equipment operatives, and laborers (except farm) to all employed persons 16 years old and over.
Occupation, service:	Ratio of service workers except household to all employed persons 16 years old and over.
Occupation, household:	Ratio of private household workers to all employed persons 16 years old and over.
Families with children:	Ratio of families with one or more related children under 18 present to all families.
Children:	Ratio of people age 6 to 18 to all people.
Elderly:	Ratio of people greater than 60 years old to all people.
Black:	Ratio of black people to all people.
Population:	Count of all persons residing in school district.

Table 2 (continued)

Suburban:	Ratio of persons living in urban places (greater than 2500) of an urbanized area except the central city to all persons.
Urban:	Ratio of persons living in central city of an urbanized area to all persons.
Rural:	Ratio of persons living in rural areas to all persons.
Assessed value per ADA:	Ratio of equalized assessed property value (one-quarter of market value) to average daily attendance, 1970.
Assessed value per capita:	Ratio of equalized assessed value (one-quarter of market value) to population.
Residential per total property:	Ratio of aggregate value of owner-occupied housing units to four times the equalized assessed value.
Owner-occupied:	Ratio of owner-occupied housing units to all housing units.
House value:	Ratio of aggregate value of owner-occupied housing units to number of owner-occupied housing units.
State revenues, growth:	Ratio of 1971-72 total state income to 1969-70, minus one.
Total expenditures, growth:	Ratio of 1971-72 total current expense of education to 1969-70, minus one.
Local per total revenues:	Ratio of revenues derived from local property taxes to total current expense of education (1969-70).
Teacher expenditures, growth:	Ratio of 1971-72 teachers' salaries to 1969-70, minus one.
Assessed value, growth:	Ratio of 1971-72 equalized assessed value to 1969-70, minus one.
ADA, growth:	Ratio of 1971-72 average daily attendance to 1969-70, minus one.

effective period. The proposed tax rate is $.35 greater in the failing districts than in the passing districts.[1]

The striking degree of similarity of the district characteristics is in disagreement with most previous studies of tax elections. However, single variable analysis may mask underlying relationships that can be observed only when other things are held constant. For that kind of analysis, a multivariable approach is required. Regression analysis fulfills that need.

Multivariate Analysis

Linear regression analysis was chosen as the main instrument for examining the effects of a large number of variables on election results. The dependent variable is dichotomous or binary, taking on the value of one if the election passes, and zero if it fails.[2] Our initial exploration of the data indicated that the hypothesis based on the election-related variables was best supported by the data. The variables are the change in tax rate and its square, the proposed level of the new tax, the period for which the tax would be in effect, and dichotomous variables indicating the type of school district.[3] Change in tax rate was evaluated in both the absolute and ratio forms with quite similar results.

To this basic equation were added, separately and in turn, sets of variables intended to test the other hypotheses. Tests of the

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[1]Tax rate is stated as a dollar amount per hundred dollars of assessed value. Assessed valuations are equalized across counties to a standard one-quarter of estimated market value. Therefore, to obtain a true tax on market value, one must divide the stated rate by four.

[2]Some important issues arising from dichotomous dependent variables are discussed at the end of Section III. At this point it is sufficient to note that ordinary least squares estimates yielded better results than maximum likelihood logit estimates. In this section, results are based on the ordinary least squares equations.

[3]Three separate variables were defined for each district type so as to take on the value of one if a district were unified, elementary, or secondary, and zero otherwise.

statistical significance of the sets of variables are shown in Table 3. The equations themselves are shown in Table 4, equations (1) through (8).[1]

Most of the explained variance is accounted for by the election variables. When all of the 34 variables are included in one equation, the R^2 rises to .214 rather than the .152 for the election variables alone. The SES and other community characteristics by themselves yield an R^2 of only .065 (not shown in Table 4).

An appropriate test of the significance of a set of variables is the Chow F test that the unexplained variance is significantly reduced. (Chow, 1960.) These tests are shown in Table 3. The maintained hypothesis or base equation in most cases is the election equation (1). Although all of the sets of variables except education and demography are significant at the conventional levels, the election variables are by far the most important. Thus when 29 other variables are added to the election variables, the F statistic of 34 is an order of magnitude greater than the F statistics testing the alternative hypotheses. Additionally, the coefficient values on the election variables were stable and always significant, whereas the coefficients on the other variables exhibited considerable fluctuations in both their values and significance depending on the specific formulation of the equations.

An equation we shall use in subsequent analysis adds the income variable measuring the percentage of families with income greater than $25,000 per year to the election variables (equation 9). This income variable was stable and significant and improved the predictive ability of equation (1).

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[1] It will be noted in Table 4 that some variables are omitted. For example, in equation (2), one income variable is not included--the percentage of families with income less than $5000 per year. The reason for this omission is that a set of classification variables that are both mutually exclusive and exhaustive is linearly dependent. They cannot all be included in a regression equation simultaneously. Thus, the five income variables measuring the percentage of families in each of five income classes must add up to 1.0. Knowing the values of any four of the variables allows one to calculate the value of the fifth. The five variables are therefore not independent as the statistical theory requires. At least one of the variables must be omitted from the equation. The choice of which one is theoretically irrelevant.

Table 3

TESTS OF ALTERNATIVE HYPOTHESES BASED ON ELECTION EQUATIONS

(from equations shown in Table 4)

Variables in Maintained Hypothesis	Variables in Alternative Hypothesis	Equations in Table 4	F-Test of Alternative Hypothesis[a]	Degrees of Freedom	Significance
Election variables	Income	1,2	3.9	4, 967	.005
Election variables	Education	1,3	.6	2, 969	>.25
Election variables	Occupation	1,4	2.0	6, 965	.06
Election variables	Demography	1,5	1.3	7, 964	>.25
Election variables	Property	1,6	2.6	5, 966	.025
Election variables	Disequilibrium (growth variables)	1,7	2.8	4, 967	.025
Election variables	All the above	1,8	1.9	29, 942	.005
All but election variables	Election variables	8,1	34.0	5, 947	<.001

[a]The F-statistic is derived from the Chow test, based on the reduction of unexplained variance when the variables of the alternative hypothesis are added to the variables of the maintained hypothesis.

Table 4

SELECTED EQUATIONS SHOWING EFFECTS OF ALTERNATIVE SETS OF INDEPENDENT VARIABLES WITH DICHOTOMOUS PASS-FAIL DEPENDENT VARIABLES

Equation Number	1	2	3	4	5	6	7	8	9
R^2	.151	.164	.153	.161	.158	.162	.160	.065	.158
Number of observations	977	977	977	977	977	977	977	977	985
Constant	.893	.211	1.04	.473	.776	.815	.699	.541	.889
Proposed tax	-.042	-.055	-.047	-.048	-.052	-.069	-.029		-0.57
	(2.4)	(3.0)	(2.7)	(2.7)	(2.8)	(3.0)	(1.7)		(3.4)
Tax change	-1.34	-1.31	-1.34	-1.34	-1.33	-1.31	-1.37		-1.33
	(.81)	(8.0)	(8.1)	(8.1)	(8.0)	(7.8)	(8.3)		(8.1)
Tax change squared	.955	.915	.971	.957	.952	.951	.978		.94
	(4.4)	(5.4)	(4.5)	(4.4)	(4.5)	(4.4)	(4.5)		(4.4)
Period	-.0064	-.0060	-.0065	-.0061	-.0061	-.0060	-.0067		-.0062
	(3.5)	(3.3)	(4.5)	(3.3)	(3.3)	(3.2)	(3.6)		(3.3)
Elementary	.074	.065	.067	.062	.059	.048	.158	.078	.066
	(2.3)	(2.0)	(2.1)	(1.9)	(1.8)	(1.3)	(3.5)	(1.2)	(2.1)
Unified								-.126	
								(1.9)	
Income, $5,000-$10,000		1.33						2.14	
		(3.1)						(3.0)	
Income, $10,000-$15,000		.397						.431	
		(1.1)						(.26)	
Income, $15,000-$25,000		.697						.732	
		(1.5)						(1.0)	
Income, >$25,000		1.57						1.10	.918
		(2.9)						(1.3)	(3.1)
Education, high school			-.237					-.567	
			(.95)					(1.3)	
Education, college			.047					-.853	
			(.27)					(1.8)	
Occupation, professional				1.19				.133	
				(2.2)				(.05)	
Occupation, managerial				.821				-.369	
				(1.1)				(.32)	
Occupation, crafts				1.10				-.042	
				(1.6)				(.00)	
Occupation, sales and clerks				-.408				-1.85	
				(.75)				(2.2)	
Occupation, blue collar				.594				-.907	
				(1.1)				(1.2)	
Occupation, farmers				.208				-.770	
				(.37)				(.95)	
Families with children					.163			-.745	
					(.32)			(.72)	
Young adults					-.058			.355	
					(.10)			(.45)	
Elderly					.072			.088	
					(.08)			(.32)	
Suburbs					.169			.167	
					(1.9)			(2.3)	
Urban					.137			.237	
					(1.8)			(2.7)	
Rural					.049			.017	
					(.88)			(.22)	
Black					-.637			-.610	
					(1.6)			(1.5)	
Assessed value, ADA						-.013		-.022	
						(1.1)		(1.4)	
Residential/total property						-.219		-.200	
						(2.3)		(1.7)	
Owner occupied						.195		.369	
						(1.3)		(1.5)	
House value						.077		.080	
						(3.1)		(1.3)	
State revenues, growth							.199	.124	
							(2.0)	(1.1)	
Local/total revenues							.218	.249	
							(2.2)	(1.7)	
Teacher expenditures, growth							.003	.066	
							(.26)	(.52)	
Assessed value, growth							.045	.134	
							(.14)	(1.1)	
ADA, growth							.013	-.034	
							(.20)	(.42)	

Notes: Figures in parentheses are t statistics. Variables defined in Table 2.

Alternative Formulations

With these results in hand, we tested a number of additional hypotheses and formulations. As with the test of differences in the means of district characteristics, we thought that perhaps the multiple inclusion of many districts might have obscured the importance of some variables. Equations were therefore estimated from a sample where each district was represented by only the most recent election.[1] By inspection of the results, there were no significant differences in these equations compared with the full sample.

Previous studies on tax elections have noted that turnout has an important negative effect on tax election passage. Since major elections stimulate a higher turnout than do tax elections by themselves, a dummy variable was defined to equal one if a tax election took place during a general or major primary election, and zero otherwise. We added this new variable to equation (9) of Table 4. It was statistically significant with a t statistic of 2.3 and had a fairly large effect--a tax election had a 10 percent lower probability of passing if it were held during a major election.

An alternative to the income variables used thus far--percentage of families in each income class--is to use the average income in the district. This variable performed less well, both in linear and quadratic form, mainly because of the distinctly irregular effect of income.[2]

Since the total school property tax faced by taxpayers is composed of the voted rate plus the various permissive overrides, we thought that perhaps the total effective tax rate would be more meaningful than the voted rate. The total effective tax rate was defined for these purposes as the ratio of locally raised expenditures to the total value of assessed property. This hypothesis was rejected because the coefficient on the total tax rate was much less statistically

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[1] In the samples related to the equations of Table 4, 496 districts held 977 elections. Over the six-year period, therefore, each district held on average two elections.

[2] Equation (2) of Table 4 illustrates the non-linearity of income.

significant than the coefficient on the rate established by the electorate.

We had noticed in some exploratory regressions that when several sets of SES variables were included simultaneously, the results were often inconsistent from equation to equation. This could happen either because these variables were interdependent--for example, the number of workers in professional occupations is highly correlated with high income and college education--or because most of these variables were not very important, thus yielding fluctuating statistical results. Using factor analysis, a composite SES measure was constructed and substituted for the several SES variables. This composite variable was completely insignificant when added to equation (1) of Table 4.

The general lack of significance of the disequilibrium growth rate variables and the "wrong" sign of the coefficient on growth in state revenues led us to test whether we were inappropriately extending these growth variables from the years over which they were measured to earlier and later years. We therefore estimated equations for a subsample of elections covering only the years over which the growth variables were calculated: 1969-71. On inspection, little change was noted between the equations of the subperiod and those of the complete period.

At an early stage of the research, two variables seemed to have a large effect--the growth in total expenditures from 1969-70 to 1971-72 and the deviation from an expected tax rate (as estimated by a tax rate equation based on the 1969 tax rate). However, with a subsample of elections for only the most recent years, these variables completely lost their significance, indicating that the causal relationship ran from election passage to expenditure growth and positive tax rate residual, rather than the reverse.

In a study on the demand for educational expenditures derived from household utility functions, Peterson (1973) has suggested that citizens will vote for a higher tax rate when actual spending levels in the school district are at a lower than desired level. The demand function that he derives from the household utility function has the following form:

$$\ln(E) = a_0 + a_1 \ln Y + a_2 \ln\left(\frac{V + 100\ R}{AV/ADA}\right) + a_3 \ln r + a_4 \ln(S/ADA),$$

where E = locally raised school expenditures per ADA;
ADA = average daily attendance;
Y = average family income;
V = average value of owner occupied houses;
R = average value of monthly rentals;
AV = total assessed property value;
r = ratio of rented units to total housing units;
S = state educational funds.

The second term in the equation is the price to a family of raising the level of expenditures by one dollar per pupil. Peterson's hypothesis, which he explicitly claims is relevant to individual decisions and not to the aggregate behavior that we are examining, is that the difference between desired expenditures (E^*) as predicted from the equation and actual expenditures (E) should be positively related to the probability of passage; that is,

$$\text{Probability (Pass)} = f(E^* - E).$$

This equation was estimated for 500 observations from 1970 and later using 1969-70 census and finance data.

$$\text{Probability (Pass)} = .2 - \underset{(.8)}{.045}\ \ln E + \underset{(1.85)}{.19}\ \ln Y - \underset{(1.15)}{.046}\ \ln\left(\frac{V + 100\ R}{AV/ADA}\right) - \underset{(2.2)}{.14}\ \ln r - \underset{(2.2)}{.20}\ \ln(S/ADA);\ R^2 = .045.$$

Taking the basic equation variables equation (equation 1 of Table 4) as the maintained hypothesis, the F statistic of this alternative disequilibrium hypothesis has a significance level of about .01. Reversing the comparison yields an F that is significant way beyond .001. These results indicate that the Peterson disequilibrium formulation, while statistically significant, does not explain aggregate voter outcomes as well as the elections variables hypothesis. These results

suggest that aggregate analysis does not yield good estimates of the type of household demand functions postulated by Peterson.

Our general conclusion from the evidence of the equations is that the major effect on election results comes from those variables directly associated with the election. The only SES (or income) variable that is consistently important and significant is the proportion of families in the highest income class. Of the several disequilibrium hypotheses, one is significant, but neither as significant nor as powerful as the election variables.

How Well Do the Equations Fit the Data?

The usual measure of goodness of fit (R^2) is an unreliable indicator of how well an equation fits the data when the dependent variable is dichotomous.[1] However, other techniques can be used to determine how well the equations behave. For the following analysis, we used the equation with the election variables and the percentage of families in the highest income class (equation 9 of Table 4). From this equation we calculated the probability of passage for each observation.

These predicted probabilities were grouped and averaged for proposed tax rate and tax change intervals. The average predicted probabilities are plotted against the tax variables in Figure 1. Also plotted in Figure 1, for comparison purposes, are the actual election results, grouped and averaged over the same intervals. The plots show that the equation fits the data quite well, although the R^2 is only .158.

This same equation can also be used to predict election results. In Table 5 we show the actual election results for three intervals of calculated probabilities. For low calculated probabilities, we would predict little likelihood of passage. According to the table, 74

[1]The chief reason for the unreliability of R^2 is that the total variance of the dependent variable is completely determined by the proportionate numbers of "zero" and "one" observations. Therefore, the percentage of this variance attributable to the equation (R^2) depends on the particular distribution of "zeros" and "ones" in the analyzed sample.

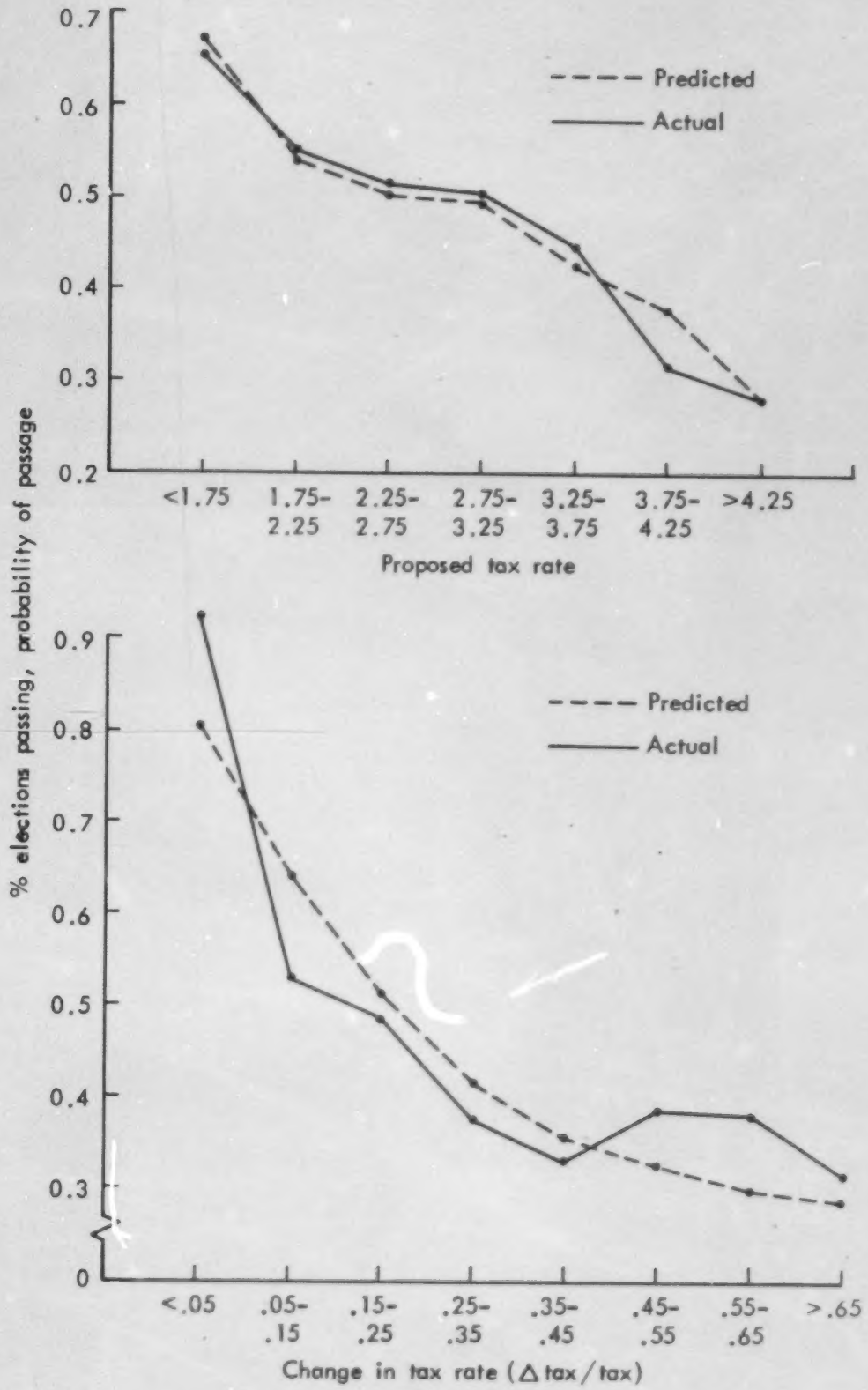

Fig. 1 — Predicted and actual election results for proposed tax rate and change in tax rate

Table 5

ABILITY OF EQUATION TO PREDICT THE PASSAGE OR FAILURE OF SCHOOL TAX ELECTIONS

(number of elections)

	Calculated Probability of Passage		
Actual Election Results	<.35	.35-.65	>.65
Pass	58	283	191
Fail	168	246	38
Total	226	529	229
Percent Passing	25.7	53.5	83.4

percent of the elections with calculated passage probabilities under 35 percent actually failed to pass. For high calculated probabilities, 83 percent passed. At the sample extremes, then, the equation was 79 percent correct for 46 percent of the cases. However, 54 percent of the observations were in the midrange where pass and fail could not be successfully predicted. This is just what one should expect. A predicted probability of passage of 50 percent would mean that the actual result is a tossup, and half should fail and half pass. A point worth noting is that these unpredictable cases can be predictably placed in the unpredictable category.[1]

YES VOTES, NO VOTES, AND TURNOUT

A recurrent theme in the literature on voting behavior concerns the difference between assenting voters and dissenting voters. The important theoretical and statistical results that are consistent from study to study include the following points: There is a core of

[1] A somewhat better prediction technique is to estimate the equation from one portion of the data and then to predict the remaining data points. We did this by estimating a prediction equation from 1966 to 1970 observations, and then predicting 1971-72 results. In this test, we were 80 percent correct in our predictions for 48 percent of the test sample, a result quite close to that reported above.

assenting voters, the size of which depends primarily on the socio-economic status of the voter or community and on the presence of children in households; a latent negative sector is activated either by a situation of community conflict (often related to the tax election) or by individuals turning out to vote in a major election in which the school issues are subordinate; turnout--the percentage of registered voters who actually cast ballots--is therefore associated with negative votes. To develop our analysis of these aspects of voting behavior, some simple algebra is required.

Let Y = number of yes votes;
N = number of no votes;
V = total number of registered voters;
Y/V = assenting vote (as percentage of all registered voters);
N/V = dissenting vote (as percentage of all registered voters);
T = Y/V + N/V = turnout (as percentage of all registered voters);
P = Y/(Y + N) = (Y/V)/(Y/V + N/V) = yes votes (as percentage of total votes cast).

Our data for 1971-72 contain P and T for 144 elections; since Y/V = PT and N/V = (1 - P)T, we can calculate assenting and dissenting voting percentages and relate these to the other variables in our data base. Some of the conclusions of earlier studies (as presented in Section II) were tested by estimating regression equations with Y/V and N/V as dependent variables, and occupation, education, income, and various demographic measures as independent variables. Few of these variables were statistically significant, and the percentage of variance accounted for by the equations was quite small. (The R^2 were on the order of about .03.)

We then added the election variables shown to be important above. These variables were highly significant, and the explanatory power of the equation was greatly increased. The equations for Y/V and N/V are shown as equations (1) and (2) of Table 6 and are plotted in Figure 2. Assenting and dissenting votes, as predicted from the equations, are

Table 6

ASSENTING, DISSENTING, TURNOUT, AND YES VOTE EQUATIONS

Equation Number	1	2	3	4	5
R^2	.181	.371	.169	.580	.622
Number of observations	144	144	144	144	144
Dependent variables	Electorate Voting Yes	Electorate Voting No	Turnout	% Voting Yes	% Voting Yes
Constant	.222	.142	.600	.629	.693
Tax change	-.296 (3.2)	.651 (5.9)	.231 (2.9)	-1.15 (10.8)	-1.05 (10.1)
Tax change squared	.309 (2.1)	-.529 (3.0)		1.07 (6.2)	1.06 (6.5)
Elementary	-.044 (2.5)		-.092 (2.6)		
High school	-.049 (2.2)		-.109 (1.8)		
Income, $10,000-$15,000				-.23 (1.3)	
Income, >$25,000		-.307 (2.0)			.366 (2.7)
Occupation, professional				.379 (2.2)	
Occupation, managerial	.618 (2.5)				
Occupation, sales and clerks		.394 (1.7)		-.325 (1.5)	
Occupation, farmers	.521 (2.6)			.494 (1.7)	.689 (3.4)
Young adults		-.683 (2.1)	-.959 (1.8)		
Suburbs			-.078 (1.7)		
Assessed value, ADA		.014 (2.4)	.021 (1.6)		
Owner occupied		-.190 (2.1)	-.266 (1.9)	-.325 (1.5)	.140 (1.7)
Residential/total property		.086 (1.9)	.165 (2.4)		
Turnout, predicted					-.0033 (2.2)
Turnout, unpredicted					-.0019 (3.9)

Figures in parentheses are t statistics. Variables defined in Table 2, except as follows:

Electorate voting yes: Assenting votes; percentage of registered voters who vote "yes."

Electorate voting no: Dissenting votes; percentage of registered voters who vote "no."

Turnout: Percentage of registered voters who vote.

% voting yes: Percentage of turnout who vote "yes."

Turnout, predicted: Turnout as predicted by equation 3.

Turnout, unpredicted: Residual from equation 3.

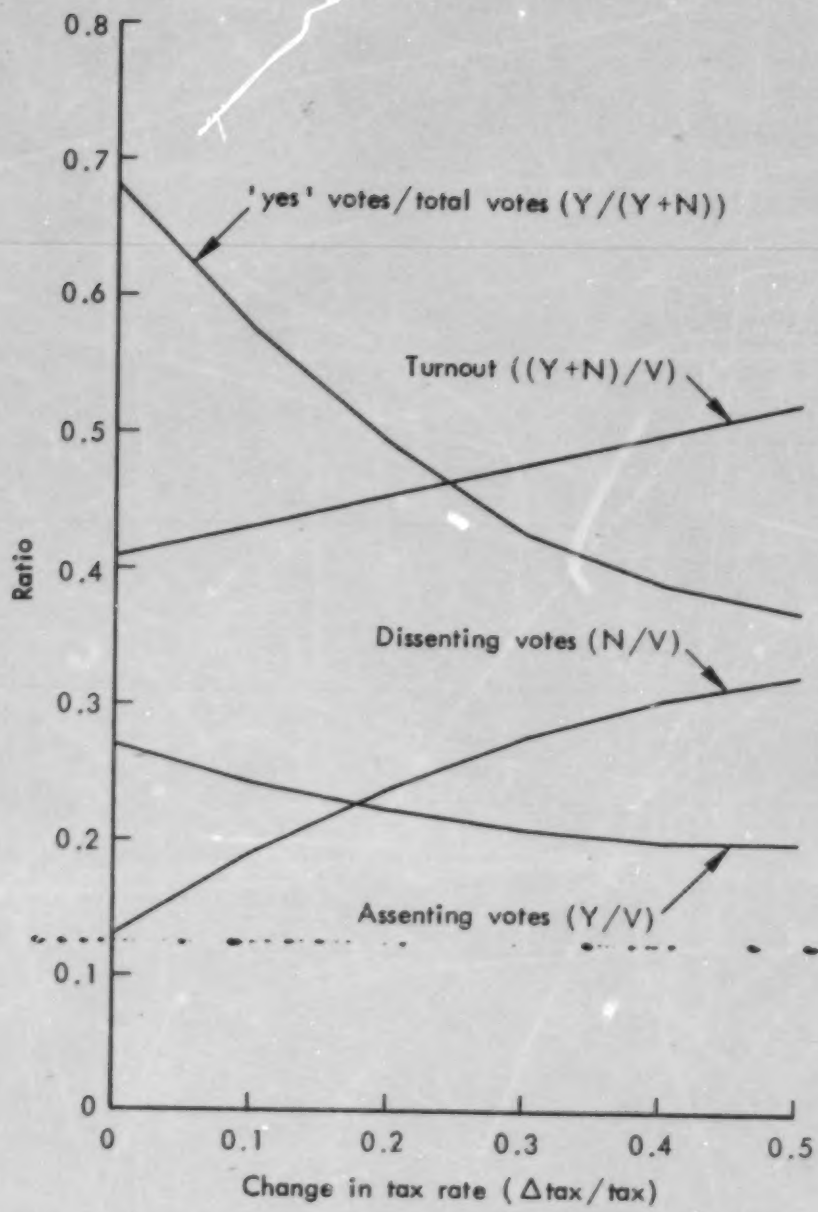

Fig. 2—Voting behavior as related to change in tax rate

plotted against the percentage change in the tax rate, with the other variables in the equations evaluated at their sample means. Some of the results of the earlier studies are clearly borne out in our analysis. The core of assenting voters is larger than the bloc of "no" voters, for small tax increases. However, as the tax increases become larger, the proportion of registered voters turning out to vote "yes" declines somewhat, and the dissenting voters turn out at higher rates. Eventually, the "no" voters dominate and the proposal fails.

Despite our emphasis on tax rate changes, it should not be thought that community composition has no effect. The position of the curves is determined by several socioeconomic factors. The assenting voters' curve rises with the percentage of managers and farmers in the community. The dissenting votes increase with the following variables: percentage of workers in clerk and sales occupations; amount of assessed residential property wealth; and property wealth per pupil. It falls with higher levels of the percentage of young people, percentage in the highest income class, and number who own their homes.[1]

A turnout equation was then estimated (equation 3, Table 6) and plotted in Figure 2. The turnout, dissenting, and assenting curves graphically demonstrate the reason for increasing dissent as turnout grows--the "no" voters turn out to vote against larger tax increases.

The "yes" votes as a percentage of total votes cast (P) was also estimated (equation 4, Table 6) and plotted. This curve crosses the dividing line between pass and fail (50 percent "yes" votes) with a tax rate change of about 18 percent, which is very close to where the assenting curve crosses the dissenting curve.

We had noticed that turnout had a significant effect on "yes" votes even when the tax variables were included in the "yes" vote equation. Turnout is especially dependent on random forces: whether the tax election is held concurrently with general elections, what the weather conditions are, community conflict, and so on. That other forces are important is demonstrated by the relatively low R^2 for the

[1] These SES variables are less significant than the tax variables and fluctuate in importance with the inclusion or exclusion of other variables.

turnout equation--around .18. To assess the relative importance of random versus predictable turnout (as predicted by our equation) on election passage, we estimated an equation for P that included both predicted and random turnout elements.[1] Actual turnout (T) can be defined as the sum of the predicted value ($\hat{T}$) and a random element (e). Therefore $T = \hat{T} + e$, or $e = T - \hat{T}$. The random element, e, can then be calculated as the actual turnout minus the predicted value. An equation was estimated for P that included both $\hat{T}$ and e. (See equation 5 of Table 6.) This equation can be rewritten as $P = .684 - .33\hat{T} - .19e$ if the other variables are evaluated at their means. The equation implies that fewer voters vote "yes" who turn out as predicted than who turn out for other (random) reasons. However, both types of marginal voters--predictable or random--are on balance dissenters. These results support the maxim of school administrators that the best way to win a tax election is to pray for rain.

A DIGRESSION ON THE REGRESSIONS[2]

The relationship between the pass-fail dichotomous variable and the continuous percent "yes" vote variable has so far gone unspecified. In addition, there are several potential problems with estimating linear regression equations with a dichotomous dependent variable. In the following paragraphs we shall try to elucidate some of these theoretical and statistical points. For a small subsample of observations (144 cases) we have data on both pass or fail and the percent of "yes" votes. This subsample is used in the subsequent statistical analysis.

The voting process is a sequence of transformations between continuous and dichotomous states. A voter's preferences extend over a range of values of many dimensions. At the polls, he is required to evaluate the tax proposal on the basis of his preferences and make a dichotomous decision. These dichotomous decisions are then aggregated and the percentage of "yes" votes--a continuous variable--is calculated.

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[1] By "random," we mean here simply those effects that could not be accounted for by the information at hand.

[2] This section owes a great deal to the criticism of our colleague, Bridger Mitchell.

If the percentage is above a specified value, the election passes--a dichotomous outcome.

The dichotomous pass-fail equation can be interpreted as a linear probability function. That is, the value of the dependent variable as calculated from the equation is the conditional probability that the event (passage of the election) will occur given the values of the independent variables. The dichotomous and the continuous equations then are estimating different things--the probability of an election passing, and the percentage of "yes" votes cast in an election. How are these two functions related? One can unite these two functions by calculating the probability that for a given estimate of "yes" votes--as estimated from the continuous equation--the actual percentage voting "yes" will be greater than 50 percent; that is, one converts the point estimate of "yes" votes into a probability that the election passes. This estimate should be the same as that derived from a probability function.[1]

To make the comparison between the continuous and dichotomous equations, we re-estimated these equations using the same set of variables in each (Table 7). Predictions from these equations were averaged over tax change intervals and plotted against tax change in Figure 3. From the continuous percent "yes" equation we calculated and plotted the probability of the election passing as described above. As can be seen from the curves in Figure 3, the calculated probabilities lie quite close to those derived from the statistically generated dichotomous equation.

There are many statistical problems involved in ordinary least squares (OLS) estimates of equations with dichotomous dependent variables. Since probabilities cannot extend beyond zero and one, OLS estimates of a probability function may be misspecified since such estimates are not constrained to lie within the unit interval. The

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[1]The probability is calculated as follows: Probability (Pass) $= 1 - F[(.5 - \hat{P})/\sigma]$, where P is the estimated value of percentage "yes" votes, σ is the prediction interval, and F is the cumulative distribution function of a standardized normal variable. At points near the means of the variables, the prediction interval reduces to the standard error of the regression. See Theil (1971), pp. 134-137.

Table 7

EQUATIONS FOR ELECTION RESULTS BASED ON DICHOTOMOUS AND CONTINUOUS DEPENDENT VARIABLES

Equation Number	1	2
R^2	.416	.578
Number of observations	144	144
Dependent variables	Dichotomous Pass-Fail	Turnout Voting Yes
Constant	1.07	.749
Tax change	-3.26	-1.10
	(7.9)	(10.3)
Tax change squared	3.63	1.14
	(5.6)	(6.8)
Income, >$25,000	1.18	.326
	(2.4)	(2.6)
Turnout	-.0050	-.0021
	(2.6)	(4.3)

NOTE: Figures in parentheses are t statistics. Variables defined in Tables 2 and 6.

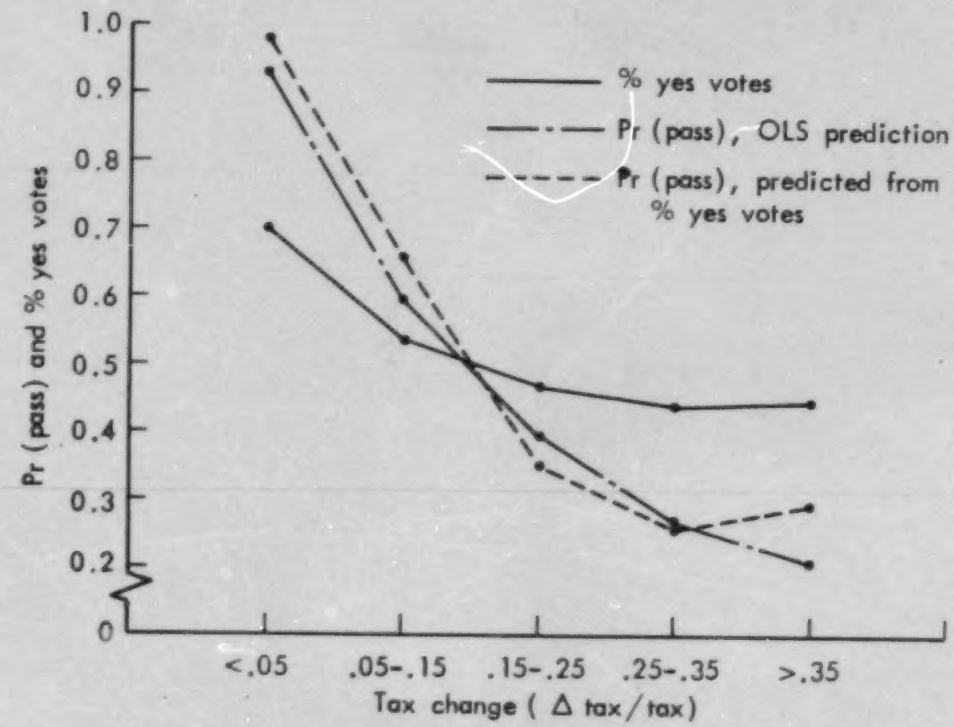

Fig. 3 — Transformation of continuous "yes" votes equation to dichotomous pass-fail probabilities

variance of the error term is heteroscedastic and OLS estimates are therefore inefficient, and the t statistics of the coefficients are biased downward making hypothesis testing uncertain. The fitted relationship is highly sensitive to the location of the explanatory variables. Multiple R^2 is not meaningful. And because the dependent variable is not normally distributed, no linear method of estimation will in general be fully efficient.[1] A technique that avoids these problems is a maximum likelihood logit estimation. The logit equation describes an S-shaped distribution of the probabilities--a distribution that is attractive on *a priori* grounds, but, as it turns out, it does not fit our data as well as the previously estimated OLS equations.

In Figure 4 a maximum likelihood logit estimation is compared with the OLS estimate of equation 1, Table 7. The average predicted values from the two estimating equations for tax change intervals are plotted along with the actual election results.[2] The same test was made with estimations of OLS and logit estimations of the full sample. The logit equation fit the data much less well than did the OLS estimate.

Estimation problems of the type explored here usually arise when the distribution of dichotomous events is highly skewed or when the values of the independent variables cluster at the extremes rather than around the mean. Since neither of these conditions exists in the present data set, and since the OLS estimates appear to fit the data quite well (as shown in Figures 1 and 4), we are confident in the results described earlier based on the OLS procedure.

CONCLUSIONS

One of the purposes of this section has been to demonstrate the means by which we arrived at our conclusions by describing to the

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[1] This catalogue of *potential* problems is taken from Nerlove and Press (1973), pp. 5-7.

[2] The estimated logit equation was:

$$\text{Probability (Pass)} = 1/(1 - \exp(-1.98 + \underset{(5.5)}{9.63}\ \Delta\text{tax/tax} - \underset{(4.3)}{10.66}\ (\Delta\text{tax/tax})^2$$

$$+ \underset{(.3)}{.0042}\ \text{Period} - \underset{(2.2)}{3.49}\ \text{Income} > 25\text{K} + \underset{(2.7)}{.019}\ \text{Turnout})).$$

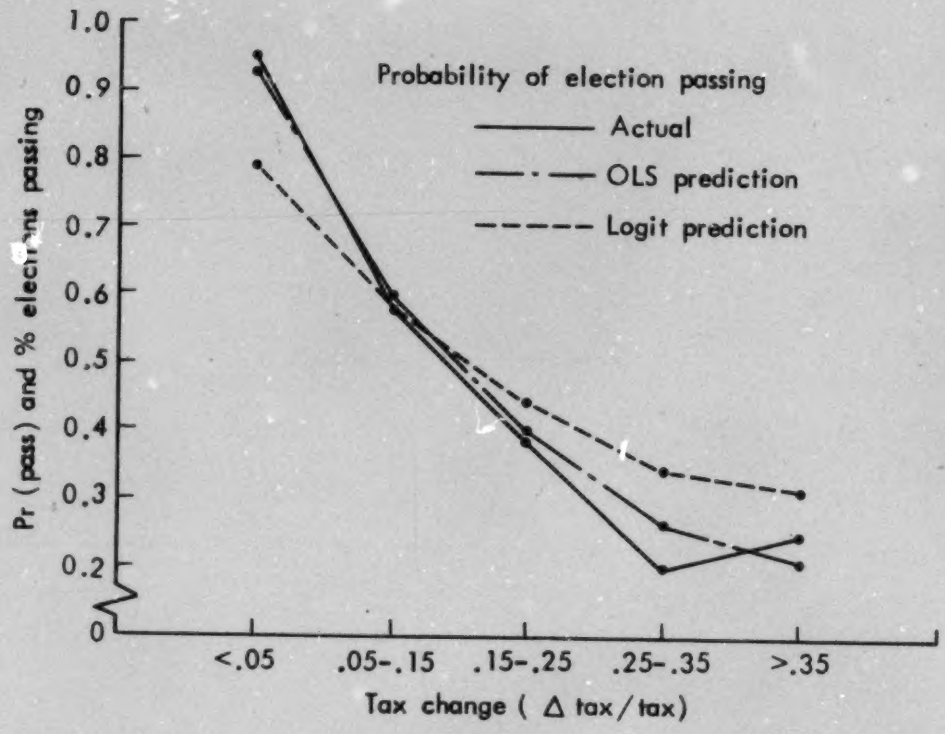

Fig. 4 — Comparison of ordinary least squares (OLS) and logit predictions with actual election results

reader the many hypotheses, tests, and formulations that were examined. A reason for doing this explicitly is to overcome what we feel to be a major shortcoming of other studies on election behavior. There is in general no test of the robustness of claimed results nor additional tested hypotheses that could equally well explain the reported findings. Some studies are primarily *ad hoc* explanations of rather simple statistical tests. Often the conclusions are neither convincing nor consistent.

In describing our own conclusions, we must note an important *caveat*. The findings relate to aggregate community responses and not to individual behavior. Whether this is a defect in the analysis depends on the questions that the research is designed to answer. Here we have been interested in school district election results. The appropriate level of aggregation is therefore at the district level.

A particular strength of our approach is that, by observing the demonstrated choices of the electorate, we avoid the many complex problems inherent in asking directly how or why individuals would make a set of choices under certain conditions. It could be claimed that we have only analyzed the choices of those who actually vote, and that this group is a rather small proportion of the citizenry. That is certainly true, but the fact that most people do not choose to voice their opinion by voting is an important element of the choice process. The issues may not be important enough nor the feeling of effectiveness strong enough to warrant the time and effort required to bring them to the polling booth. Rather than being a defect in the study, it represents an important positive feature of the analysis. We are not interested in the opinions of those who do not express them in an operational way. By voting, the citizen registers the ordinal ranking of his interests. Nevertheless, we did attempt to understand the conditions leading to greater community involvement in the tax election process by looking at the determinants of turnout.

Our findings in this section are both positive and negative. We can say with confidence that the proposed tax rate and the increase in tax rate are the strongest and most consistent correlates of tax election passage. Of all the other variables considered, the proportion of families in the highest income category (greater than $25,000 per year) was the most consistently important. The low or medium income classes, and the occupational classifications of blue collar and clerks and salesmen were weakly linked in a negative way to electoral support. The proportion of owner occupied housing was positively related to election passage. The several disequilibrium hypotheses were, in general, disappointing. Beyond that, the other variables fluctuated from equation to equation and it would be unwarranted to claim that we found any additional consistent or strong relationships. However, the number of negative findings turns out to be as interesting as the positive things that can be stated. The great similarity between passing and failing districts and the often complete lack of significance of many SES variables is startling. Our *a priori* hypotheses were largely unsupported by the evidence.

IV. IS THE TAXPAYER REVOLTING?

MEANINGS OF TAXPAYER REVOLT

Since a major topic of this study is the taxpayer's revolt, we discuss three levels of meaning that are pertinent. We can define a situation as one of revolt: (1) when voters turn down tax referenda more frequently than in the past, for whatever reason; (2) when voters are faced with new or changed conditions and, as a consequence, turn against tax referenda; and (3) when behavior patterns change such that, even when conditions are accounted for (held constant), fewer tax referenda are accepted.

These possibilities are sketched out in Figure 5. To simplify matters, suppose that election passage depends only on the proposed tax. Lines A and B can represent two different patterns of behavior; in both cases the probability of passage falls with higher tax rates. Line B, however, represents an electorate more accepting of taxes than the electorate described by line A--for a given tax the probability of success in B is greater (compare points 2 and 5).

According to the first definition, the movement from any higher point to any point that is lower represents revolt. Therefore, movement from points 4 to 1, 4 to 2, 1 to 2, 1 to 3, etc., are all revolts. By the second definition, a movement from 1 to 2 or from 4 to 3 would be a revolt as the voters, faced by higher taxes, vote down the elections, even though their underlying structure of behavior is unchanged. Now, what about a movement from 1 to 5, or from 5 to 1? Movement from one curve to another represents a shift in the underlying behavior and by definition (3), movement from 5 to 1 would be called a revolt while a shift from 1 to 5 could be called surrender. There would be revolt according to this definition even if the actual percentage of passing referenda increased, such as a movement from 3 to 1 (admittedly, an unlikely possibility).

Definition (1) is the simplest and requires the least amount of information--only a time series of passes and fails. An underlying structure is required by definition (2), and a discernible shift in

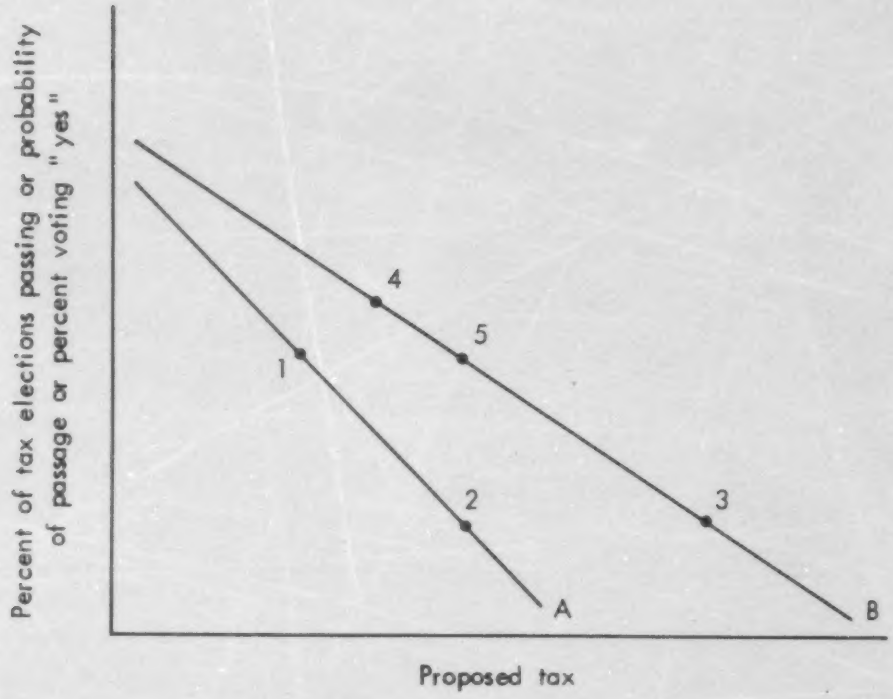

Fig. 5— Shifts in voting behavior and outcomes

structure is the criterion for definition (3). Because we believe that the last two definitions provide the greatest possibility for understanding tax referenda we have laid great stress on estimating the patterns of voter behavior and on the ability to measure changes over time.

1966-1972: YEARS OF REVOLT, BUT NOT FOR TAXPAYERS

The latter half of the 1960s was marked by widespread campus disorders, public distress over the war in Vietnam, constantly rising taxes at the local level, and a putative public disaffection with the educational process. Many observers place the taxpayer's revolt in this time period, for any (of all) of the reasons listed above. We have attempted to discover trends or shifts in behavior signifying revolt by a number of different techniques, basing our strategy on the several definitions of revolt described in the previous section.

The percentage of passing elections for each calendar year from 1966 to 1972 is presented in Table 8, together with relevant tax rate

Table 8

ELECTION RESULTS AND TAX RATES,
1966-1972

Year	Number of Elections Analyzed	Percent Passed	Average Proposed Tax Rate	Average Existing Tax Rate	Average Proposed Tax Increase, Percentage
1966	185	53	2.18	1.77	23
1967	64	58	2.23	1.82	23
1968	138	61	2.46	2.01	22
1969	215	50	2.61	2.02	29
1970	273	45	2.67	2.08	28
1971	216	56	2.58	2.08	24
1972	125	51	2.48	2.09	19

data. The most recent years show a somewhat lower success rate than the earlier years, but there is no overall trend, and 1972 is not very much different from 1966. Over the seven year period, the existing tax rate rose 18 percent, but the years of greatest increase--1967 to 1968--also had the greatest success rate in passing still higher taxes. The proposed tax rate change shows an interesting trend: It climbs to almost 30 percent in 1969 and 1970, accompanied by falling success rates. The proposed increases then fall sharply through 1972. This pattern may reflect a gradual learning process by school authorities as they gained experience about what the voters would find acceptable.

The data in Table 8 do not indicate a revolt according to the simplest definition--a marked decrease in election passage. However, behavior may have been changing in subtler ways, or other things may have changed that would cloud one's observations of a clear trend.

The equations describing voter behavior that we estimated above provide a starting point from which to look for changes in behavior. We added to equation 9 of Table 4 a few selected variables on the basis of their performance in a step-wise regression. To this equation we

added sets of variables defined for each year.[1] These variables would indicate any shifts in the equation's coefficients for the constant term, the proposed tax rate, and the proposed growth in tax rate (Equations 1-5, Table 9). *None of these variables are ever significant, either separately or combined!* There is no discernible shift in voter behavior from 1966 to 1972.[2]

To discover whether there was a change in behavior from the earlier half of the period to the later half, we estimated equations for 1966-1969 and 1970-1972. The equations were statistically different only at a significance level of more than 19 percent.

Thinking that perhaps taxpayer revolt might be localized to certain kinds of communities or socioeconomic classes, we separated the observations into subsamples representing urban and rural districts, rich and poor districts, and districts heavily populated by blue collar workers.[3] Using the separate years variables approach (as in Table 9), we once again found no evidence of a behavioral shift in any of the subsamples.

Finally, we suspected that since the proposed tax rate was steadily rising over the period, it would be correlated with the years variables and could absorb all of their explanatory power. To test this, we estimated the basic equation without the proposed tax rate, but with the years variables. The years variables were still insignificant. One

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[1] Dichotomous dummy variables were defined for each year. The proposed tax rate and change in tax rate were then multiplied by the dummy variables. The dummy variables themselves would indicate a simple shifting of the equation, by year, holding the slopes constant. The year dummies times the other variables yield measures of slope changes for each year. The changes are all relative to the omitted year, 1966.

[2] The Chow test was used in this test and in those described below (Chow, 1960).

[3] Rural districts were defined as having more than 70 percent of their population living in rural areas, urban had more than 70 percent in central cities of urban areas; rich districts had an average value of owner-occupied houses greater than $25,000, and the value in poor districts was less than $10,000; blue collar districts were defined as having over 55 percent of adults with only a high school education and at least 20 percent in the blue collar occupations. (See Table 2 for definitions of these variables.)

Table 9

TEST OF SHIFTS OF COEFFICIENTS OVER YEARS 1966-1972 WITH DEPENDENT PASS-FAIL DICHOTOMOUS VARIABLES

Equation Number	1	2	3	4	5
R^2	.172	.178	.179	.176	.191
Number of observations	985	985	985	985	985
Constant	1.22	1.23	1.22	1.24	1.32
Proposed tax	-.062 (3.4)	-.064 (3.4)	-.069 (2.8)	-.063 (3.4)	-.101 (2.2)
Tax change	-1.34 (8.1)	-1.33 (8.1)	-1.31 (7.9)	-1.36 (6.6)	-1.40 (5.2)
Tax change squared	.98 (4.6)	.97 (4.5)	.94 (4.4)	.97 (4.4)	.97 (4.3)
Period	-.0063 (3.5)	-.0062 (3.4)	-.0061 (3.3)	-.0061 (3.4)	-.0059 (3.2)
Elementary	.063 (2.0)	.067 (2.1)	.068 (2.1)	.068 (2.1)	.069 (2.1)
Income, >$25,000	1.07 (3.6)	1.04 (3.2)	1.03 (3.1)	1.06 (3.2)	.985 (2.9)
Occupation, sales and clerks	-1.52 (3.6)	-1.54 (3.7)	-1.53 (3.7)	-1.58 (3.8)	-1.50 (3.6)
Suburbs	.133 (2.5)	.143 (2.7)	.143 (2.7)	.138 (2.6)	.140 (2.7)
Urban	.180 (2.7)	.177 (2.6)	.172 (2.5)	.181 (2.7)	.171 (2.5)
Year 1967		-.060 (.8)			-.175 (.71)
Year 1968		.057 (1.0)			-.177 (1.0)
Year 1969		.020 (.4)			.020 (.13)
Year 1970		-.037 (.7)			-.158 (1.1)
Year 1971		.037 (.7)			-.076 (1.1)
Year 1972		-.053 (.9)			-.30 (1.6)
Tax 1967			-.020 (.63)		.024 (.26)
Tax 1968			.031 (1.4)		.088 (1.3)
Tax 1969			.009 (.44)		.019 (.32)
Tax 1970			-.009 (.45)		-.007 (.12)
Tax 1971			.020 (1.0)		.064 (1.1)
Tax 1972			-.007 (.29)		.120 (1.7)
Tax change 1967				-.038 (.15)	.261 (.64)
Tax change 1968				.21 (1.0)	.087 (.26)
Tax change 1969				.014 (.08)	-.093 (.31)
Tax change 1970				.059 (.35)	.430 (1.5)
Tax change 1971				.050 (.28)	-.168 (.54)
Tax change 1972				-.22 (1.0)	-.272 (.77)

NOTES: Figures in parentheses are t-statistics.

Variables defined in Table 2 except for the following:

Year 1967 (etc.): Dichotomous variable; equals one if year is 1967 (etc.), and zero otherwise.

Tax 1967 (etc.): Proposed tax times year 1967 (etc.).

Tax change 1967 (etc.): Tax change times year 1967 (etc.).

can also compare the coefficient value and significance of the proposed tax in equation 1 of Table 9 with the coefficient on the same variable in the other equations and note that this variable maintains its importance with the inclusion of the years variables.

These results convincingly demonstrate that there was no shift in voter behavior during the years 1966 to 1972, and according to any reasonable definition, no sign of taxpayer revolt. The 1950s, however, present a different picture, and to those years we now turn.

FROM THE 1950s TO THE 1960s--DECADES OF CHANGE

The success rate of tax elections during the mid-1950s was strikingly higher than in later years. Well over 80 percent of the elections passed; 15 years later, only half passed. Table 10 presents the same kind of information for 1953-1957 as Table 8 did for 1966-1972. According to the simple definition of taxpayer revolt, there was a sharp shift over the decades. But notice as well that tax rates were also very different. To test whether a single equation would fit the entire range of years, or whether separate variables representing different relationships would better describe the two decades, we added to a basic equation (equation 1, Table 11) variables designed to measure any changes from the 1950s to the 1960s (similar to the years variables discussed above).

Table 10

ELECTION RESULTS AND TAX RATES, 1953-1957

Year	Number of Elections	Percent Passed	Average Proposed Tax Rate	Average Existing Tax Rate	Percent Average Proposed Tax Increase
April 1953 to September 1954	256	82	N.A.	N.A.	N.A.
January 1955 to February 1957	448	88	1.51	1.03	.47

NOTE: N.A. = not available.

Table 11

EQUATIONS FOR ELECTIONS HELD IN 1950s AND 1960s WITH DEPENDENT DICHOTOMOUS PASS-FAIL VARIABLES

Equation Number	1	2	3
R^2	.127	.205	.205
Number of observations	1664	1664	1664
Constant	1.15	1.00	1.02
Proposed tax	-.171 (13.7)	-.095 (6.9)	-.101 (1.7)
Tax change	-.166 (3.0)	-.534 (9.2)	-.537 (9.3)
Tax change squared	.087 (3.3)		
Period	-.0074 (5.3)	-.0073 (5.5)	-.0073 (5.5)
High school	-.143 (4.6)	-.096 (3.2)	-.096 (3.2)
1950s		.086 (2.1)	
Tax 1950s			.055 (2.1)
Tax change 1950s		.610 (8.1)	.600 (7.6)

NOTE: t statistics in parentheses. Variables are defined in Table 2, except as follows.

1950s: Dichotomous variable equals one if election takes place in 1950s and zero otherwise.
Tax 1950s: Proposed tax times 1950s.
Tax change 1950s: Tax change times 1950s.

Certain data problems arose at this point. The 1953-54 election data source provided no information on tax rates, so these 256 cases had to be dropped from further analysis. Also, since our census and school finance data were based on 1970 sources, we felt that it would be inappropriate to extend this information to mid-1950s observations. The basic equation was therefore based only on those variables directly related to the election itself.

A dummy variable was defined to equal one if the election took place in the 1950s, and zero otherwise. The proposed tax rate and change in tax rate were then multiplied by the 1950s dummy variable. (See equations 2 and 3 of Table 11.) The results are striking. The change in tax rate loses all of its importance in the 1950s. However, the other years variables are more difficult to interpret. Both the constant term and the coefficient on the proposed tax rate show large and significant changes when they are not included in the equation together, but when they are included simultaneously, they wipe out the significance of each other. (The correlation between them is more than .94.) To help clarify the question of whether the curve shifted or the slope of the proposed tax rate changed, we estimated separate equations for each time period. These equations unambiguously demonstrated that the coefficient on proposed tax for the 1950s was half that of the 1960s, indicating that equation 3 of Table 11 is the preferred equation.[1] This equation is plotted in Figure 6.

The main conclusion that we draw from these results is that behavior did indeed shift between the 1950s and 1960s. The importance of tax change was absent in the earlier period, and the effect of the proposed tax was only half that of later years. Thus, the high success rates for tax elections in the 1950s can be explained by two factors: The proposed tax rates were lower and voters were more willing, in general, to assent to higher taxes. Subtle and complicated statistical tests are not necessary to show that at some point between 1957 and 1966, the taxpayer revolted. His behavior changed at the same time the

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[1] Notice that for equations 2 and 3 of Table 11, the change in tax rate is entered linearly rather than as a quadratic. The squared term was not at all significant in these formulations.

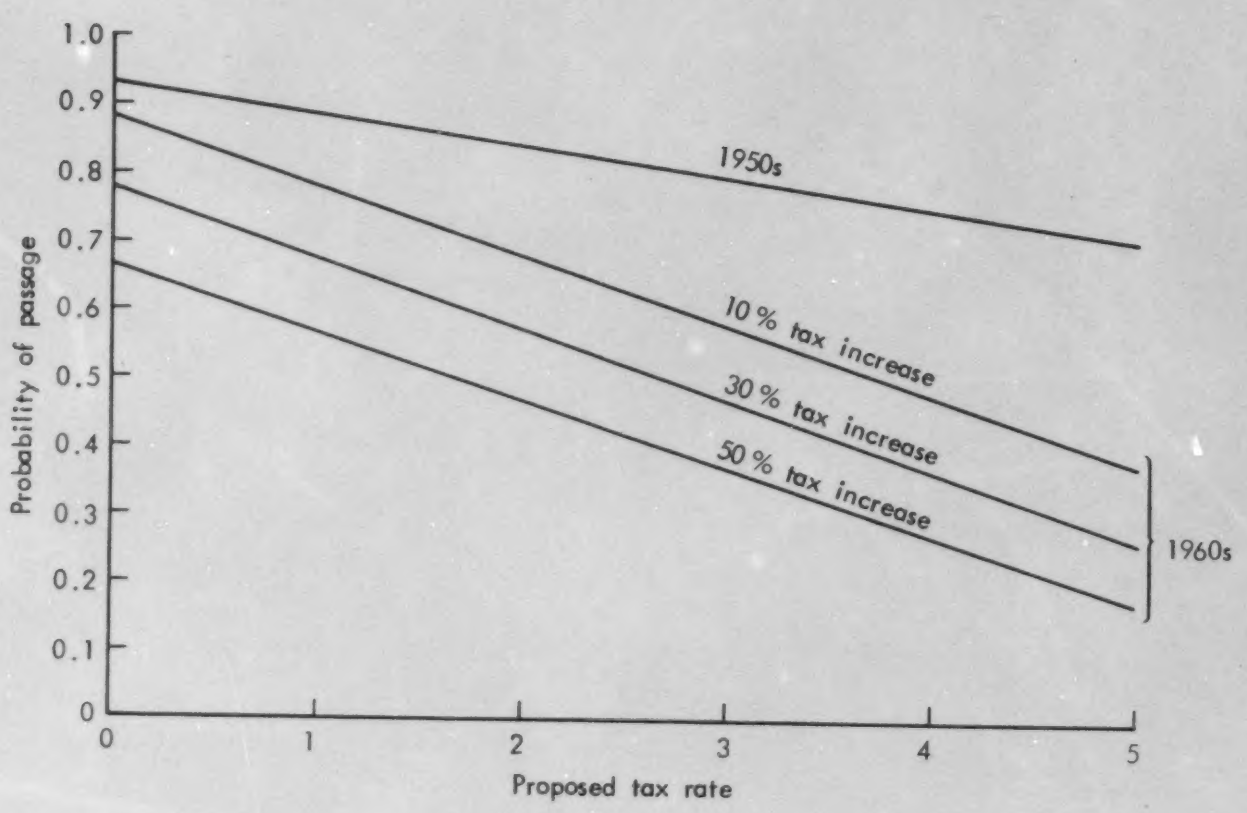

Fig. 6 — Shift in voter behavior from 1950s to 1960s

chief determinant of voter behavior--the taxes themselves--were growing larger.[1] Unfortunately, the data are lacking that would allow us to pinpoint more precisely when, during the ten-year gap in our data, the revolution in behavior took place.

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[1] A question arises here as to how to treat inflation. We ignore it because the tax rate is not a dollar figure but a ratio--taxes per hundred dollars of assessed value. As a ratio, the dollars cancel out. As for the variables that are measured in dollars--most important, assessed property values--they are well correlated with inflation in educational expenditures in the long run. In the short run, however, there may be lags as assessors respond to changes in market values.

V. WHEN ARE ELECTIONS HELD?

The passage of tax elections can be considered a two step process. First, the authorities place the issue on the ballot. Then the voters respond. Voting behavior is fairly diffuse as the results of the previous sections have demonstrated. The average citizen knows very little about the technical issues of tax elections, turnout is low, and passage is determined mainly by the factors relating directly to the election itself. However, school authorities who call tax elections are professionally involved in the details of school management. We therefore expected that the process of calling elections would be somewhat more predictable than the response of the electorate. We were wrong.

The initial hypothesis was that uncontrollable changes in factors affecting school finance would stimulate the calling of an election. In particular, changes in assessed property values, pupils, state financial aid, and expenditures on teachers were expected to be important.[1]

To investigate the determinants of calling a tax election, we compiled a sample of all school districts, designating which ones held at least one election during the years 1969 to 1972. During this period, 47 percent of the districts held elections. As the first step of the analysis, the means of community characteristics were computed for the two subsamples--districts holding and not holding elections. Only those characteristics that were significantly different between the two subsamples are shown in Table 12. (All of the variables of Table 1 were evaluated.)

The only significant difference between districts consistent with our initial hypothesis is in the growth of assessed value. The largest interdistrict differences are observed for district types, the urban or rural nature of the community, and several variables representing the property base. These last variables suggest that it is the low property wealth districts and those with a higher proportion of owner

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[1] Changes in teacher expenditures were considered to be determined by labor market forces beyond the control of individual school districts.

Table 12

CHARACTERISTICS OF DISTRICTS HOLDING AND NOT HOLDING TAX ELECTIONS[a]

Variable	District Means: Holding Elections	District Means: Not Holding Elections	Significance of Difference[b]
Districts, number	335	373	
Elementary[c]	.481	.576	.011
Unified[c]	.355	.290	.062
Income, $5,000-$10,000	.305	.323	.001
Income, $15,000-$25,000	.176	.162	.019
Education, high school	.577	.595	.012
Occupation, service	.120	.127	.006
Urban	.091	.051	.017
Rural	.382	.453	.018
Assessed value/capita	3290	3740	.045
Residential/total property	.362	.315	.008
Owner occupied	.581	.555	.006
Assessed value, growth	.144	.170	.044

NOTES: Means are the unweighted means of district characteristics.

Variables are defined in Table 2.

[a]Only those variables with a significance level below 10 percent are shown.

[b]Significance is the two-tailed probability that means are equal.

[c]The numbers shown represent the percentage of districts holding and not holding elections by district type.

occupied housing units and a higher proportion of residential to total property who hold elections. However, many of these variables are interrelated. The proportion of residential property is correlated positively with the proportion of owner occupied residences and urbanness, and negatively correlated with assessed value per capita--chiefly because of the absence of industrial and commercial property--and the ruralness of districts. It is difficult, therefore, to do other than catalogue the differences between subsamples. To test the independent effects of the many variables, it is necessary to perform a multivariate analysis.

After evaluating several equations in much the same manner as reported in Table 4, we settled on the equations shown in Table 13. Two of the variables require further explanation--the positive and negative difference between the actual and expected tax rate. The expected tax rate was derived from an equation with tax rate as the dependent variable. The independent variables were selected from the full set used throughout this report.[1] The reason for using residuals from the tax equation is based on the hypothesis that school administrators gain some notion of what is appropriate for their districts by observing the behavior of other similarly situated districts. A tax rate equation establishes a standard by which we can assign an expected tax rate to each district. If a district has a lower than expected tax rate, the hypothesis would predict the calling of an election to catch up; and if the actual tax rate were higher than expected, the likelihood of calling a tax election would be reduced. The reason for splitting the difference between actual and expected tax rate into positive and negative components is to test whether the effect is symmetrical or not. The measured effect of a higher than expected tax rate is somewhat stronger than that of a lower tax, as shown in Table 13.

The only property variable appearing in these equations is the growth in assessed value, which has the expected negative effect on the holding of an election. The variable with the greatest and most

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[1] We found that tax rate was mainly a function of assessed value per average daily attendance (AV/ADA). See Table 13, equation 1 for the tax rate equation.

Table 13

EQUATIONS FOR TAX RATE AND CALLING AN ELECTION

Equation Number	1	2
R^2	.781	.088
Number of observations	713	710
Dependent variables	Tax Rate	Election
Constant	3.12	1.42
Elementary	-1.29	-.135
	(30.8)	(3.5)
High school	-1.44	
	(23.7)	
Income, $5,000-$10,000	-1.63	-1.69
	(4.2)	(4.5)
Income, >$25,000		-.93
		(2.1)
Education, elementary	1.02	
	(3.9)	
Occupation, professional	1.60	
	(4.1)	
Suburban	.138	-.210
	(2.5)	(3.3)
Rural		-.105
		(1.8)
Assessed value	-.311[a]	
	(9.4)	
Assessed value, growth		-.385
		(3.5)
Assessed value/ADA		-.021
		(2.1)
ADA	.39[a]	
	(13.4)	
Black	.683	
	(2.2)	
Bay Area	.473	
	(7.3)	
Tax (actual-expected), if >0		-.314
		(4.4)
Tax (actual-expected), if <0		.243
		(3.0)

[a] Natural logarithm of variable.

Notes: t statistics in parentneses. Variables defined in Table 2, except as follows.

ADA: Average daily attendance, 1970.

Assessed value: Total assessed property value, 1970.

Bay Area: Dichotomous variable equaling one if district in counties surrounding San Francisco Bay, and zero otherwise.

Tax (actual-expected), if >0: Residual from equation 1 if greater than zero, otherwise zero.

Tax (actual-expected), if <0: Residual from equation 1 if less than or equal to zero, otherwise zero.

consistent effect is the proportion of families in the $5,000-$10,000 per year income class. This same variable also has a strong negative effect in the tax rate equation. The $5,000-$10,000 income class tends to be rural, have low housing values and low eduation, be employed as laborers and farmers, and be associated with high values of district property wealth.

Communities with a large proportion of this income class are therefore not especially property poor nor is the electorate forced to foot the education bill by themselves, since there is, on average, a considerable amount of non-residential property.[1] The strong negative effect of this variable could be attributed to a simple income effect--that is, a relative inability to pay for education--or to a weak taste for schooling, either of which could be recognized by school authorities who would consequently be less likely to call tax-raising elections.

How then does one explain the negative effect of the highest income class? Since *post hoc* explanations are a game anyone can play, our explanation is that since the proportion of high income class is strongly related to the passage of tax elections (see equation 9 of Table 4), there is less of a need for repeating elections until a desired tax is finally approved.

From this analysis, one is left with the conclusion that the rather weak statistical relationships depend mainly on deviations from "normal" tax rates and on community characteristics rather than on changes affecting district budgets.

How well, in fact, do these equations perform as predictors of elections? We used the same prediction technique here as in predicting passage and failure. The probabilities of holding an election were calculated from equation 2 of Table 13. As shown in Table 14, two prediction intervals were evaluated: less than 35 and greater than 65 percent conditional probabilities; and less than 45 and greater than 55 percent conditional probabilities. In the first case, the predictions

[1] Much of the non-residential property may be farm property, which many observers feel has a different effect on perceived property values than commercial or industrial property.

Table 14

ABILITY OF EQUATIONS TO PREDICT SCHOOL DISTRICTS HOLDING ELECTIONS

(number of districts)

	Calculated Probability of Holding Election		
Actual Election Results	<.35	.35-.65	>.65
Hold election	95	262	17
Not hold election	29	253	53
Total	124	515	70
Percent holding elections	23.4	50.9	75.7

	Calculated Probability of Holding Election		
Actual Election Results	<.45	.45-.55	>.55
Hold election	183	114	77
Not hold election	97	88	150
Total	280	202	227
Percent holding elections	34.6	56.5	66.1

were 76 percent correct, but for only 27 percent of the observations. Expanding the prediction interval, as in the second part of the table, increased the coverage but reduced the accuracy--the equation was 66 percent correct over 72 percent of the observations. These predictions are not as good as we were able to achieve in predicting election passage or failure. Yet, for a small designated subsample, 76 percent accuracy was attainable, and for the broader sample the achieved accuracy was good enough to make one a rich man at the race-track.

As suggested a few paragraphs above, tax elections may serve as a strong feedback mechanism informing school authorities of what their community finds acceptable. Our data allow us to investigate this point by dividing elections into two subsamples--the most recent in a district,

and those coming before the most recent. The major differences between these two subsamples (Table 15) are that the most recent elections request smaller tax rate increases from the electorate than did the earlier elections, and they are much more likely to be successful. In looking through the data, we were struck by the fact that, after a failure, repeat elections within the district tend to sweeten the package by reducing both the proposed tax and the period over which it will be effective. In district after district, this process continues until a proposal is passed. However, the community itself is being acted upon by the electoral process; in many instances the same proposal that failed once may pass the second or third time around. Both of these learning effects are combined in Table 15. The difference in tax increase alone accounts for about a 10 percent increased probability of passage. The rest of the difference in success rates probably emanates from altered community values based on previous elections, or perhaps from living with the reality of cutbacks resulting from previous tax election failures.

Table 15

CHARACTERISTICS OF THE MOST RECENT AND PREVIOUS ELECTIONS

	Number	% Pass	% Tax Rate Increase, Proposed
Most recent	496	63	.248
Previous	481	36	.276
Total	977	50	.262

VI. SUMMARY AND CONCLUSIONS

SUMMARY OF STATISTICAL FINDINGS

As emphasized repeatedly in the course of this report, a very few variables account for most of the explanatory power in the passage of tax elections and in the composition and size of turnout. Of the more than 50 variables we examined, the proposed tax rate and its change were dominant. Despite our emphasis on the tax rate, some other variables were consistently, if weakly, significant, depending on the other variables present in an equation or on the particular sample used. In general, one can conclude that the highest income class and managerial and professional occupations were associated with greater electoral support. Despite the correlation between income and occupation, these variables usually retained their statistical significance, even when included in the same equation. Educational levels in the community, however, were never significant. The low-to-medium income classes and blue collar and white collar occupations were linked with negative support of tax elections. With respect to the composition of the property base, the proportion of owner occupied housing was positively related to assenting votes and election passage and negatively related to dissenting votes. The proportion of residential property was positively related to dissenting votes and negatively related to the percent "yes" votes. Turnout is positively related to dissent because the voters turn out to vote down higher taxes, explicitly or in conjunction with a general election on other more random events.

In determining who holds elections, the community type has the greatest effect. Low wealth and low income are negatively related to the holding of elections. Elections are also less likely in rural and suburban districts, and more likely in cities. But the greatest effect comes from the differences between the actual tax rate and a predicted rate for districts of the same type.

The data clearly show a taxpayers' revolt, probably taking place in the early 1960s. Just as clearly, the period since the mid-1960s has been marked by stability. From the 1950s to the 1960s, voters were

altering their behavior while taxes were increasing. This combination of effects led to the success rate at the polls falling from 80 percent in the 1950s to 50 percent in recent years. Predictions as to whether the current stability will be maintained are offered in the last part of this section.

Throughout the statistical analysis, the subject has been the average behavior of voters. At no time have we considered individual school districts. However, we think that fruitful research can be done by looking at the deviants from our average relationships. For example, in Table 5, we show 38 election failures where the probability of passage was high. Who are these districts, what are their histories and their characteristics? What distinguishes them from the 58 districts passing elections where failures was predicted? We suspect that a case study technique combined with our statistical approach would yield an understanding not obtainable by either method alone.

TAXPAYER REVOLT IN FACT AND FANCY

Political rhetoric on the subject of taxpayer revolt is widespread, especially in California. The research described in this study suggests that there has indeed been a shift away from voter acceptance of higher taxes, but that voter behavior stabilized in a new and continuing pattern more than a decade ago. What is the relationship between the results of our statistical analysis and the widespread cries of revolt?

First, not everyone subscribes to the notion of a revolt. In discussions with California state legislators and other state politicians and their aides, we repeatedly heard that calling attention to a taxpayer revolt was often politically motivated or self-serving. One cannot lose popularity with the voters by calling for lower taxes or property tax relief. Is this all then just rhetoric? We think not. National opinion polls show property taxes to be by far the most disliked tax.[1] According to the authors of one study, who interviewed large numbers of California political actors, "In all our interviewing we found no elected officials actually enthusiastic about the property

[1] Advisory Commission on Intergovernmental Relations (1973), pp. 160-165.

tax; they were overwhelmingly hostile" (Meltsner et al., p. 209). The same authors, however, quote a state finance expert who had a somewhat different view: "Politicians have a managed to create the priority of property tax reduction" (Meltsner et al., p. 141). It is difficult for politicians to create something from nothing, and one does not have to look far to find a basis for the observed hostility to property taxes in different sectors of the community.

To individual home owners, property taxes have high visibility. Although sales and income taxes are generally paid in small amounts throughout the year, the property tax bill in California is payable in one or two lump sum installments.[1] Furthermore, the uses to which the tax receipts are put are presented on the tax bill itself. Whether for schools or mosquito abatement, the relative amounts are clearly stated. This is in sharp contrast to other taxes where one has only a very fuzzy notion as to the final use of the tax dollars.

Property taxes can also be highly oppressive to some classes of taxpayers--those with low income but comparatively valuable property. These are usually (but not always) older people whose income has fallen but who still own property purchased years earlier. Whereas income and sales taxes vary with income and expenditures, property taxes and income are unrelated.[2] The growth in numbers of retired people signals a growth in that class of property tax payers most adversely affected by the present system. Older people, although perhaps not voters in tax elections, represent an important interest group that can put pressure on political leaders for tax relief.[3]

There are many other powerful interest groups who favor property

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[1]Although many homeowners have impound accounts with their mortgages and pay taxes on a monthly basis.

[2]This is true in a formal sense in that the tax bill takes no account of income; but from a statistical point of view, the value of one's property holding is a good measure of long run or "permanent" income. This observation offers the retired home owner little comfort at tax paying time.

[3]This relief has in fact been granted to some degree in most states by tax credits for older citizens.

tax reductions, especially if combined with overall tax limitations--oil companies, utilities, real estate groups, and other major financial interests.[1] The influence of these groups becomes more powerful when allied with a political philosophy that favors reduced levels of government spending. Such a philosophy became manifest when in 1967 Governor Reagan took office in California, proclaiming a political philosophy consonant with limitation of expenditures.

An important phenomenon that reduces the perceived need for higher taxes is the declining growth rate in numbers of pupils. After enormous growth after World War II, rates of change have fallen constantly since the mid-1950s. By 1973, this trend had resulted in an absolute drop in the total number of pupils. During those periods of rapid growth, the need for increased expenditures was directly evident to most parents. Double sessions and crowded classrooms were found throughout the state. The demand for teachers was often more than the available supply. But the baby boom of the 1940s and early 1950s has now passed through the public schools. Two decades of school system growth has allowed most districts to come close to their goals of buildings and classrooms, and teacher shortages have turned to glut. The probability of declining levels of attendance is faced by more and more school districts. Looking back to the days of rapid growth, observers of local education can see the reluctance of today's voters in relation to their earlier openhandedness. By this comparison, today's taxpayer is in revolt. Our conclusion, in contrast, is that he is now approaching equilibrium. A 20-year period of disequilibrium has ended as the growth of expenditures has caught up with the growth in the number of pupils.

These statements imply a disequilibrium voting theory of somewhat different form from those discussed earlier. This theory states that the demand for educational expenditures is for real resources per student. Major rather than marginal deviations from the desired level is the principal stimulus for election passage. Thus, the long term movement toward equilibrium in school districts throughout the state (and country) would reduce the percentage of passing elections--even though

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[1] See Meltsner et al. (1973), pp. 179, 223.

statistically perceptible disequilibriums still existed. In a poll of Southern California voters, high property taxes and education were at the bottom of a list of voter concerns. Only 3 percent of the respondents said that education was an important California problem.[1]

Since the mid-1960s we observe a combination of rising property taxes, growth in the proportion of older people in the community to whom property taxes are particularly onerous, the continued strength of anti-tax business interests, the election of a governor with clear views against government spending and higher taxes, and a declining growth rate of pupils. Under these conditions, the oft-repeated claim of a taxpayer revolt was understandable. The fact is, though, that throughout this period the voters and the legislature continued to increase taxes, and on two occasions the electorate overwhelmingly voted down measures that would place firm limits on property taxes or total state expenditures.[2]

This is not to say that there was no pressure for change. A decade of a declining proportion of state contributors to local education and the equalization requirements of the *Serrano* Court led ultimately to passage of a major tax reform bill in the 1972 California legislature. The status quo has shifted now to include the new legislation, and any discussion of the future must reckon with this new environment.

PROSPECTS

This concluding section deals briefly and primarily with California, although two important characteristics of this state are found throughout the country--declining numbers of pupils and increasing values of property wealth.

A major tax reform act was passed by the state legislature in 1972, the "Property Tax Relief Act of 1972." This act modified many of the parameters of the school finance system of the state that had been in effect during the period covered by this study but left the basic

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[1] Stevens (1973).

[2] These measures were the Watson Amendment of 1972 and Governor Reagan's Tax and Expenditure Limitation Amendment of 1973, both placed on the ballot by the initiative process.

structure unchanged. The major provisions of the act as it affected education were to increase the proportion of state aid from 32 percent to 50 percent, to link this aid to the cost of living, to provide property tax relief to poorer districts, to increase the state-guaranteed level of expenditures per pupil, to increase the homeowner's property tax exemption, and to revise the system of statutory maximum tax rates.[1] The increase in state aid to education was paid for in large measure by an increase in the sales tax. Thus, for the predictable future, California school districts, especially those with less wealth, can look forward to increased money that does not have to be raised locally, and to state mandated property tax rate reductions. At the same time that this act went into effect, the total number of pupils in the state declined for the first time in decades while the value of property continued to increase from the effects of inflation, the increased value of structures, and a steadily rising demand for land.[2] We conjecture that the total effect of these forces will be to reduce the need for property tax elections, to increase the probability that those increases asked for will be accepted, and to suppress the cries of revolt that were heard in the land.

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[1]The revision of the system of maximum tax rates requires reduction of the high rates usually found in poorer districts, the difference to be made up by increased state aid.

[2]The rising demand for land in California is less certain than the other increases as population movement into the state has slowed from past periods.

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